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June 27, 1953

INDEX

VOL. 53, NO. 26 PAGES 327-407

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



"Wings" for Boats

See Page 396

A SCIENCE SERVICE PUBLICATION

MEDICINE

Bleach Freckles, Skins

Purified monobenzyl ether of hydroquinone, finely milled and made into ointment, removes dark color from skin, such as found in liver spots and freckles.

► **GOOD RESULTS** with chemical treatment of liver spots, severe freckles, the darkened skin of Addison's disease and berlock dermatitis, in which the skin turns dark after use of certain perfumes, are reported by Drs. Aaron Bunsen Lerner and Thomas B. Fitzpatrick of Portland, Ore., in the *Journal of the American Medical Association* (June 13).

The chemical used is a purified and finely milled monobenzyl ether of hydroquinone. It was made into an ointment which has been given the trade name Benquin by the Paul B. Elder Co. of Bryan, Ohio.

In answer to the question whether this chemical can be used to remove all the pigment, or color, from a dark skinned person, such as a Negro, the doctors state:

"In general the preparations reported herein cannot be used for this purpose unless a concentrated effort is made over a long period of time.

"Even so, results would be questionable; however, in certain special cases complete depigmentation may be practicable, as in patients with vitiligo or those predisposed to this disorder."

Vitiligo, or piebald skin, is a condition in which smooth light colored patches appear.

Two Negro patients who had a disfiguring vitiligo of the face and body used the ointment on a single arm for long periods of time. They became completely depigmented except for the air and eyes, which

kept their normal coloring. One became pregnant after she had lost her dark color but was still under treatment. She gave birth to a normally colored baby.

It takes from three weeks to six months for the chemical to remove the dark color from the skin. During this time the ointment is used twice daily. After depigmentation has occurred, it is used once a day and later once a week. After treatment is stopped, the dark color comes back in two months or longer.

Some patients get a reddening and swelling of the skin from the chemical. Sensitization occurred in 13% of patients.

The chemical is not poisonous and it is possible it could be given by mouth, but the Portland doctors have not tried this method.

It was of little or no value in cafe au lait spots or dark moles.

The Portland doctors treated 84 patients with various darkened skin conditions and found that 64 showed good results. They do not recommend the treatment for mild or moderate freckles, because these usually fade out during the winter and because there is relatively high skin sensitization to the drug.

The work with this chemical was carried out over four years at Western Reserve Medical School, Cleveland, the Mayo Foundation, Rochester, Minn., University of Michigan Medical School, and University of Oregon Medical School.

Science News Letter, June 27, 1953

GENERAL SCIENCE

Warn on Reservist Policy

► **EVERYBODY** who has been on active military duty since June, 1951, can be called back to uniform in an emergency or a war no matter how essential his job is.

This would seriously disrupt the war-making industrial potential of the nation. More than 25% of all engineers and scientists now engaged in research and development programs in the country could be placed in uniform by the Defense Department, the Engineering Manpower Commission declared in New York.

Dr. Thomas H. Chilton, chairman of the commission, a body set up by the major engineering societies, reported that these are the very people on whom we depend for our continued technological and economic superiority. He said that "this situation is the

logical result of the operation of our military service laws as they are now written."

Public Law 51, passed in June, 1951, creates a compulsory reserve into which go all those leaving the service.

This compulsory reserve will shortly exceed 10,000,000. Every year it includes more people who are vital to the defense production economy, Dr. Chilton pointed out.

"The recalling of reservists to active duty in time of emergency or war rests solely in the hands of the Department of Defense. This situation," Dr. Chilton cautioned, "can create chaos in the industrial support of mobilization."

Dr. Chilton said that great industrial dislocation was caused at the start of the Korean Action by indiscriminate call-up of

reservists. Many were members of scientific research teams or were engineers vital to production of war goods.

Dr. Chilton and representatives of other groups strongly supported a bill which would set up a National Manpower Board to control recall of reservists in time of war. The Board would be in the President's office and thus would be able to control Defense Department reservist call ups.

Represented among the groups were the American Chemical Society, the American Institute of Physics, the Armed Forces Chemical Association, the U. S. Chamber of Commerce, the National Association of Manufacturers, the Scientific Manpower Commission, the National Electrical Manufacturers Association and the Manufacturing Chemists Association.

The Congress of Industrial Organizations also supports the bill, it was learned.

Science News Letter, June 27, 1953

CHEMISTRY

Spanish Moss May Yield Household Wax

► **FURNITURE WAX** may soon come from Spanish moss which festoons trees of the Southland's swamps.

Freshly gathered Spanish moss contains a green colored wax amounting to five percent of the plant's weight. This wax is easily purified and gives a hard, glossy finish to woodwork and leather, comparable to commercial waxes. Drs. Seldon D. Feurt and Lauretta E. Fox of the University of Florida College of Pharmacy, reporting in *Science* (May 29), urge some industrial organization to explore this possibility.

Science News Letter, June 27, 1953

BIOCHEMISTRY

Fatty Substance Kills Cancer Cells

► **A NEW** clue to the chemical control of cancer is a fatty substance isolated from the small intestines of mice and rats. It destroys certain cancer cells in test tube studies.

Dr. Leslie R. Bennett, assistant professor of radiology at the University of California at Los Angeles School of Medicine, reports that the precise chemical nature of the material has not yet been determined.

The substance exhibited no effect upon most normal tissues in test tube studies. It does, however, possess slight damaging properties to blood-forming cells.

The relatively low incidence of primary cancer in the small intestine suggested that its tissues might contain substances which prevent changes ultimately resulting in cancer. The fatty substance isolated in the study might be one of the cancer-prevention factors naturally occurring in these organs.

The material has not been used in the treatment of established cancer in experimental animals.

Science News Letter, June 27, 1953

SURGERY

Shaking Palsy Stopped

Accidental discovery during an operation has led to relief of nine patients disabled with shaking or rigidity, or both. Anterior choroidal artery is crushed.

► A NEW artery crushing operation, discovered by accident, has relieved some patients of rigidity and involuntary movements in the condition doctors call Parkinsonism but which the layman often calls shaking palsy.

One 36-year-old man, completely disabled and living like a vegetable for eight years, is now playing golf, six weeks after the operation.

The new operation was announced by Dr. Irving S. Cooper of New York University Post-Graduate Medical School, New York, at the meeting of the American Neurological Association in Atlantic City.

The artery that is crushed lies inside the head and originates from the internal carotid artery. It is called the anterior choroidal artery. There is one on each side of the head. In some cases both arteries are operated on, in others, only one.

The object is to affect the nerve structures supplied by this artery. Disease of these structures presumably is responsible for the shaking and rigidity in the patients.

So far the operation has been performed on ten patients disabled by shaking or rigidity, or both. One died but all the others have improved. The operation was tried on a second group of five patients with other nerve-motion disorders in which there are uncontrollable worm-like movements of hands and feet or St. Vitus-dance-like movements. Some were helped, others were not. One developed muscular weakness on one side which is improving.

The operation was discovered when Dr. Cooper was trying to relieve a 39-year-old man incapacitated by shaking or palsy on one side. The surgeon had planned to cut a part of the brain stem. Before he got that far, the left anterior choroidal artery was torn and bled profusely.

To stop the hemorrhage, the artery was squeezed closed between silver clips. Not knowing what would result from this unplanned closure of the artery, the surgeons stopped the operation at this point.

The patient got along all right, the "most notable" feature being the disappearance of the shaking. This has been relieved now for nine months and the patient is working and earning a living.

Some of the patients suffered Parkinsonism as a sequel to the brain disease, encephalitis or "sleeping sickness" as it is popularly known.

While Dr. Cooper makes no attempt to "define" the possibilities of this operation as a remedy for various conditions of shaking and rigidity, he thinks further attempts

should be made to see what can be done for advanced cases of such disorders by this surgical approach.

Science News Letter, June 27, 1953

ENTOMOLOGY

Tent Caterpillar Moths Emerging From Cocoons

► THE GREAT colonies of tent caterpillars that have been nesting in apple, wild cherry and other trees since early spring, greedily devouring their leaves, have about all broken up. These striped caterpillars, *Malacosoma americana*, have been abandoning their community tent-like nests, which can attain two feet in length, and going to secluded spots to weave their individual cocoons.

A week or two later, dull reddish brown moths emerge from the cocoons, they then mate, and each female lays all her eggs in

a single ring-like cluster about a twig. The eggs will remain dormant until early next spring.

When the eggs hatch, the caterpillars remain together and build a collective tent in the fork of a tree. The caterpillars leave the tent only to forage for food, and then they spin a silken thread wherever they go to lead them back home. As the caterpillars grow in size, they migrate to larger branches to build greater webs.

Best time to fight the pesty tent caterpillars is in early spring. The webs should be destroyed early in the morning, late in the evening or on a cool day, when the caterpillars are not scattered about the tree.

Science News Letter, June 27, 1953

NUTRITION

Introduce New Cheese For Factory Production

► A NEW mild, creamy, smooth cheese, as yet unnamed, was announced to the American Dairy Science Association meeting in Madison by dairy specialists from the University of Wisconsin. Similar to process cheese, it has a flavor all its own.

It will ripen as fast as any cheese on the market, in one or two months, and is suitable for factory production.

Science News Letter, June 27, 1953



CATERPILLAR TIME—Though they grew up in a great common group, these tent caterpillars have been separating, each to spin its own private cocoon. The adult moths emerge three weeks later.

MEDICINE

Clue to Leprosy Spread

► THE ANCIENT and still practised Buddhist custom of shaving the heads of new babies has given two U. S. Army doctors a clue to how leprosy spreads.

The disease is caught by an infant through skin-to-skin contact with a leprosy person, the doctors, Col. Edward A. Cleve and Col. Francis W. Pruitt, report from the Letterman Army Hospital, San Francisco, to the *Journal of the American Medical Association* (June 13).

In Japan, Korea and Formosa as well as China, children's heads are shaved and kept shaved from the time they are one week old until they are about four, if girls, and eight or nine, if boys.

Examinations of 1,369 patients with leprosy in leprosariums in Japan, Korea and Formosa showed that 35% were bald because of leprosy infection of their scalps. In 11 countries where infant head shaving is not the custom, less than one in a hundred (0.3%) of patients have this scalp leprosy and baldness.

The germs of leprosy, the Army scientists state, must at some time leave the patient's

body through the sweat glands. Heads shaved of their protective hair and "inevitably" nicked and cut from time to time during the shaving would give ready entrance to large numbers of the germs from an infected grown person.

In support of the skin-to-skin contact theory the Army scientists also point to the distribution of the first skin sores in children at the Culion Leprosy Colony, Philippine Islands. These appeared on both cheeks, elbows and knees and those parts of the thighs, buttocks and arms that would be in contact with the mother as she carried the baby in her hands and bare arms.

"Contraction of leprosy by healthy adults is rare and most reported cases are open to question," the scientists point out.

In a certain number of cases first recognized in a grown-up, the germs may have gotten into the body when the patient was a child and lain dormant for many years.

The way to control leprosy, Col. Cleve and Col. Pruitt state, is to separate the leprosy person from the infant or child.

Science News Letter, June 27, 1953

ceived. New York callers averaged 71,000 weather inquiries each day during 1951, but on foul days weather calls sometimes shot up to 270,000.

Science News Letter, June 27, 1953

• RADIO

Saturday, July 4, 1953, 3:15-3:30 p.m. EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Pat Murphy, assistant national director, Red Cross Safety Service, will discuss "Summer Safety."

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CHEMISTRY

Synthetic Petrochemicals

► MOST OF the organic chemicals now marketed will in the future be made from petroleum, Dr. Gustav Egloff, director of research for the Universal Oil Products Company, predicted at the meeting of the Chemical Specialties Manufacturers Association in Chicago.

Citing the fact that thousands are already so based, he said that "the possibilities are almost limitless when one considers that there are now 600,000 organic compounds and in a few years there may be over a million. Not only are new chemicals continually being introduced but new specialty applications are being found for products already in use."

As an example, he noted the epon resins, which, used primarily for primers and floor varnishes, have also been applied to a variety of fields such as baking finishes and can coatings.

New combinations of the petrochemical products are also resulting in a wide range of interesting specialties, Dr. Egloff said. Pouches of a laminated plastic material consisting of polyethylene film on the inside and cellophane on the outside are used for orange concentrate.

"A 2.5 ounce bag of concentrate can be converted to 10 ounces of juice in 15 seconds, which saves about seven cents worth of labor for each glass of juice," he stated.

Among the outstanding new products

with a wide range of possible applications is Hypolon, a chlorosulfonated polyethylene rubber. This product is completely resistant to ozone, has good resistance to abrasion, weather, heat and crack-growth. It is particularly applicable to such products as weather stripping, garden hose covers, radiator hose, and wire and cable covering.

It can be blended with other rubbers and made into tire treads without carbon black. It also can be dyed a wide range of colors.

Science News Letter, June 27, 1953

TECHNOLOGY

Dialing "Time" Gave Score to Series, Too

► MORE THAN a million New Yorkers dialed the telephone number that gave them the time of day during the 1951 World Series. Reason: Right after the time announcement, the recorded voice revealed the up-to-the-minute World Series score.

On the average, about 68,000 persons called the time number daily during the year. But 1,456,000 called it during the Series.

Describing recorded machine telephone announcements to the American Institute of Electrical Engineers meeting in Atlantic City, W. Bennett of the Bell Telephone Laboratories, Inc., said that the recorded weather announcement also was well re-

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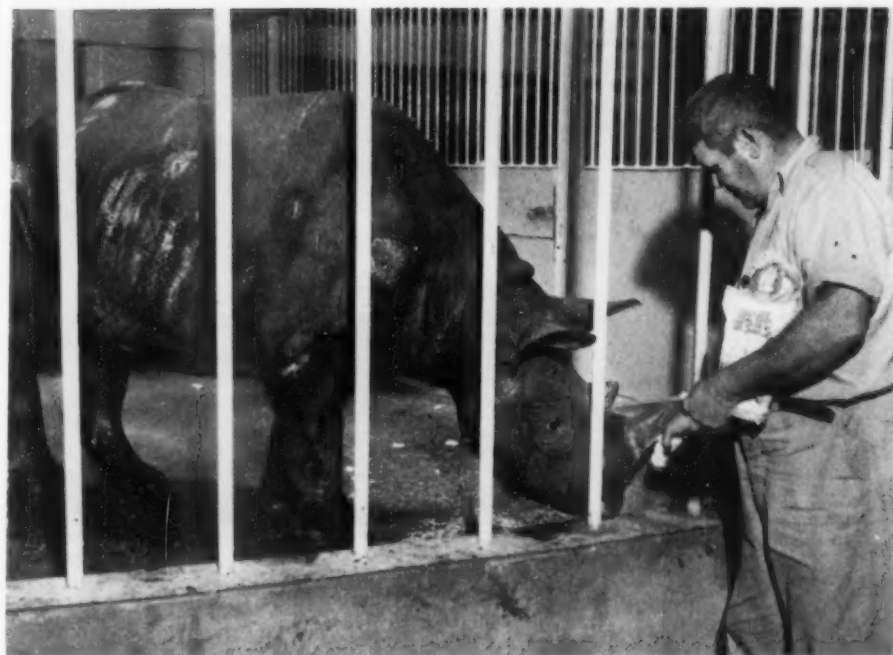
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TWO-HORNED RHINOCEROS—Josephine, the two-horned black African rhinoceros recently received at the National Zoological Park, weighs about 800 pounds and is about two and a half years old.

CHEMISTRY

New Synthetic Rubber

Polyester rubber, made from chemicals other than those used presently in synthetic rubber, is developed. The material is tough with reinforcing agents.

► A NEW synthetic rubber has been produced by research that does about everything that other man-made rubbers do and outdoes the rubber tree as well — for tire treads, for inner tubes, for oil resistance, for resistance to aging due to oxidation, for toughness against cuts and gouging.

It is polyester rubber, not made from the chemicals used for the nation's present supply of synthetic rubber. N. V. Seeger of the Goodyear Tire & Rubber Co., Akron, Ohio, told the American Chemical Society's rubber chemistry division meeting in Boston of the researches done by himself, T. G. Mastin, E. E. Fauser, F. S. Farson, and E. A. Sinclair.

Polyester rubber has twice as great abrasion resistance as the best cold rubber now used for long-wearing tire treads. It is comparable to butyl rubber for holding air in inner tubes. It stands up against oil as well as neoprene and resists oxidation with the best butyl and acrylate rubbers. Its tensile strength is 50% to 100% greater than any other type of rubber-like material.

Coatings of the new rubber can be applied to protect shoe soles and heels, belts, flooring and truck tires that receive hard wear. The

Goodyear name for the new rubber is Chemigum SL and it is described as an elastomeric polyester urethane.

The basic ingredients of polyester rubber are ethylene glycol and propylene glycol, familiar as antifreeze fluids. These are mixed with adipic acid, an intermediate in the production of nylon, and the resultant chemical is the polyester base of the new rubber.

This polyester is then treated with the chemical diisocyanate in an amount determined by the "reaction factor," the secret of the Goodyear development. This stops the solidifying reaction of the chemicals at a point where the mixture is just solid enough to be further processed into shapes in conventional rubber processing equipment.

When needed in the production of final assemblies, the rubber is given another diisocyanate treatment and formed into shape without the use of sulfur or accelerators for vulcanization. Carbon black and other reinforcing agents are not required to toughen the compound, although they may be used if desired.

Science News Letter, June 27, 1953

ENGINEERING

Trolleys More Economical Than Buses, Study Shows

► TROLLEY COACHES are more economical to operate than motor coaches, a 15-year study has revealed.

L. W. Birch of the Ohio Brass Co., Mansfield, Ohio, reported to the American Institute of Electrical Engineers meeting in Atlantic City that a survey of 14 transit companies showed trolleys averaged at least 3.5 cents less to run per mile than buses.

Chief advantage of the trolley is that it can be left out in the open during bitter winter weather. Buses must be garaged. Trolleys have a 15-year depreciation, whereas buses have a life expectancy of about 10 years.

Buses, however, are cheaper to operate from the fuel standpoint. They cost about 4.28 cents per mile. Trolleys consume about 5.22 cents of electricity per mile.

Science News Letter, June 27, 1953

PUBLIC HEALTH

Silicone Cream Protects Skin

► SILICONE FLUIDS are widely used in industry, and now one of them, polymethyl siloxane, has been made into a cream to protect the skin of industrial workers.

Good results with the cream in a trial in one industrial plant were reported by Dr. Raymond R. Suskin of the University of Cincinnati College of Medicine at the meeting of the American Medical Association in New York.

The cream is made with 52.5% silicone fluid mixed with the inert clay, bentonite. It can be put on the skin as a thin, inconspicuous film at the beginning of the work day and removed at the end of the work period. No harmful effects from it were seen after seven months continuous use.

Science News Letter, June 27, 1953

ENGINEERING

Tiny Motor to Power Aircraft Instruments

► A TINY electric motor that you can mail for six cents has been designed to fit into standard aircraft instrument cases only two inches in diameter.

Smaller than most women's thumbs, the precision induction motor is only 1.2 inches long, $\frac{3}{8}$ inch in diameter and weighs about an ounce. Its spinning armature has about the same diameter as a pea.

L. T. Akeley and J. R. MacIntyre, General Electric Co. engineers, told the American Institute of Electrical Engineers meeting in Atlantic City that the motor works on two-phase, 400-cycle current, and that it has exceptional acceleration, stall torque and efficiency.

Science News Letter, June 27, 1953

ENGINEERING

Spark Gap Guards Plane During Lightning Storms

► MANY COMMERCIAL airliners now are equipped with a gadget that protects the plane should it be hit by lightning while in flight. Usually metal planes are reasonably safe even if struck. Sometimes, however, lightning can damage radio equipment and start fires.

The protective device consists of a condenser, a spark gap cartridge and several steel strips. The condenser is wired into the radio antenna lead-in near the point where the lead-in comes into the airplane. To lightning, the condenser presents an open circuit, but it does not stop radio signals from coming into the plane.

The spark gap cartridge is connected to the antenna and to the plane's fuselage. When lightning strikes the antenna, the condenser stops it from running into the plane. The lightning then jumps the gap in the spark gap cartridge and discharges safely to the fuselage.

Reporting to the American Institute of Electrical Engineers meeting in Atlantic City, J. M. Bryant, University of Minnesota, and M. M. Newman and J. D. Robb, both of the Lightning and Transients Research Institute, Minneapolis, said valuable data have been gathered in the last two years by 50 of the devices placed on American Airlines craft.

Science News Letter, June 27, 1953

MEDICINE

Typhoid "Shots" May Lessen A-Bomb Harm

► ORDINARY TYPHOID and tetanus immunization "shots" may afford a great deal of protection against certain radiation effects of the A-bomb.

This is indicated in research at the University of California at Los Angeles Atomic Energy Project conducted by Dr. George V. Taplin, Camille Finnegan, Philip Noyes and Gerald Sprague.

Many radiation deaths are said to be the result of a temporary depression of the activity of certain defender cells in the body. These cells, known as "macrophages," are found in body tissues and form a mobile defense unit that combats invading bacteria. Radiation apparently tends to breach the defenses, and fatal infections occur.

It is known that "macrophage" number and activity are increased by several immunizing agents, including tetanus and typhoid shots. Thus such shots might offset the depressing effects of radiation on their activity and thereby reduce mortality.

The cells' activity was measured by the rate at which they remove prodigiosin, a red pigment formed by a bacillus, from the blood of rabbits. This seemed to be an accurate index of bacteria disposal by the "macrophage" system.

Science News Letter, June 27, 1953



"NAUTILUS" MODEL—A model of the first submarine to be powered by atomic energy, on display at the Museum of Science and Industry in Chicago, shows how a nuclear reactor will furnish power.

METEOROLOGY

Use 18 Salvaged Radars

► THE WEATHER Bureau has 18 tornado, hurricane and storm radar tracking stations which did not cost the taxpayers one cent.

If replaced now with new equipment, these 18 radar sets would cost a total of \$1,800,000.

Never able to get an appropriation from Congress for this vital tool in tracking and predicting the paths of tornadoes, hurricanes and other storms, the Weather Bureau begged several freight carloads of obsolete equipment from the Navy. It would have been thrown away otherwise.

One man in the Bureau's maintenance shop in Washington has been modifying this equipment practically in his spare time. Some modifications are needed so that the radar sets will track storms. The first set was put into operation in 1947. It has taken this man six years to get the other 17 into good weather-tracking condition and to install them. Latest station will be opened shortly in Little Rock, Ark.

Unfortunately, these obsolete radar sets can only track weather up to about 100 miles. Modern equipment, for which the Navy and Air Force can get appropriations, will track storms and see into the eye of a hurricane at ranges of up to 300 miles.

No appropriation has ever been granted for pay for the men who operate these sets. The regular weather observers at the 18 stations operate the sets and track the storms "in addition to their other duties," as the Army phrase goes.

Tornado, storm and line squall tracking stations are now at North Platte and Nor-

folk, Nebr.; Goodland, Dodge City, Wichita and Topeka, Kans.; Amarillo and Wichita Falls, Tex. Hurricane tracking radar sets are at Charleston, S. C.; Miami and Tampa, Fla.; Burrwood, La.; and Brownsville, Tex. A station which takes care of sudden storms in the New York City and New York harbor area has been installed there.

The Bureau gets free use of four more radar sets by cooperating with the University of Florida at Gainesville, with the Humble Oil Co. at Freeport, Tex., with the University of Chicago, and with the Civil Aeronautics Administration at the Washington National Airport.

The Bureau hopes to expand its radar coverage to Boston, Buffalo, N. Y., Detroit and St. Louis. Meteorologists generally think that every major city ought to have radar weather protection.

Science News Letter, June 27, 1953

ZOOLOGY

Chicken as Old as Human Centenarian

► ESMERALDA IS dead. The centenarian succumbed to cancer at her home in Cranbrook School, Bloomfield Hills, Mich.

In human terms, Esmeralda was only 12 years old; but to her fellow chickens, Esmeralda was an old lady indeed, with the equivalent of a 100-year human life span.

Up until a month before her death, the old matron had a 50% laying average.

Science News Letter, June 27, 1953

ASTRONOMY

Saturn Is Still Visible

Since Saturn is only planet to be seen in the evenings, July is a good month to become acquainted with constellations typical of a summer sky.

By JAMES STOKLEY

▶ WITH SATURN the only planet visible these July evenings, and that rather low in the southwest, we still have a good opportunity to get acquainted with the stars that are typical of a summer evening.

These are shown in the accompanying maps, as they appear about ten o'clock (your own kind of standard time) and an hour earlier in the middle of July. Add one hour if you are on daylight time.

Perhaps the most characteristic of these star groups is Scorpius, the scorpion, which is directly south and not far above the horizon. In it is the red star, Antares. To the left of the curved row of stars that form the scorpion's tail is Sagittarius, the archer, which has the outline of a teapot!

Just to the right of the scorpion is Libra, the scales, in which there are no very bright stars. Farther to the right is Virgo, the virgin.

This is the constellation in which Saturn shines, just above Spica, the brightest star in the group. The planet is slightly brighter, and its steady light makes it easy to distinguish from the twinkling glow of the star.

Brightest July Star

Most brilliant star of the July evening, however, is to be found high in the east, in Lyra, the lyre. This is Vega, about 2.75 times as bright as Spica, and it looks even more than that. Because it is so much higher, its light suffers less absorption passing through the atmosphere.

Vega is at the top of a triangle of bright stars which can easily be located. Below and farther north is Deneb, in Cygnus, the swan. In the southeast, almost as high, we find Altair, in Aquila, the eagle. This star may be recognized because of the fainter stars nearby, one just above, the other below.

Just to the right of Aquila are the constellations of Ophiuchus, the serpent-bearer, and Serpens, the serpent he is carrying. Between them, they cover a large area of the sky, although they contain no stars of the first magnitude.

The figure of Serpens is in two parts—one on each side of Ophiuchus. It is the only constellation so divided.

Looking toward the northwest we now find the great dipper coming into a good position. This figure is part of Ursa Major, the great bear. At the bottom of the dipper, which now hangs with the bowl downwards, are the pointers whose direction, fol-

lowed to the right, brings us to Polaris, the pole star. This is Ursa Minor, the little bear, and at the end of the handle of the little dipper.

Following toward the south the curve of the three stars, Alioth, Mizar and Alkaid, which form the handle of the large dipper, we come to the sixth and the last of the first-magnitude stars now visible. This is Arcturus, in Bootes, the bear-driver.

If the curve of the handle is followed still farther south, it leads toward Spica and Saturn.

Other Planets Visible

Two other planets can be seen late these nights, rising in the east about three hours ahead of the sun, both in the constellation of Taurus, the bull. The brighter of the pair is Venus.

The other is Jupiter, which is shining more brilliantly than any of the other planets or stars. On July 22 Venus passes Jupiter, traveling toward the east.

Both Mercury and Mars are invisible in July because they are almost in the direction of the sun. On the 25th Mercury comes nearly in front of the sun, and on July 8 Mars is directly behind it.

Compared to Orion, which shines so brilliantly high in the winter evening sky, Scorpius, which is now seen low in the south, is considerably less conspicuous. But this is largely on account of its far southerly position, so that in July we see it as high as it ever gets, in our lifetime at least.

Anyone who has been fortunate enough to view it from the southern hemisphere and see it up near the zenith, has quite a different idea of this fine group of stars.

Scorpius is the southernmost of the 12 constellations of the zodiac, the path of the

sun through the year, as well as of the moon and planets. The sun passes through the scorpion early in December. On Dec. 21, the day of the winter solstice, marking the beginning of winter, it stands just to the north of the upper of the two easternmost stars of Sagittarius, that is the spout of the teapot.

The star Antares received that name, which means "rival of Mars," because of its red color, much like that of the planet Mars. Its distance is such that its light, traveling at the speed of 186,000 miles per second, takes 172 years to reach us. Thus, we say, its distance is 172 light years.

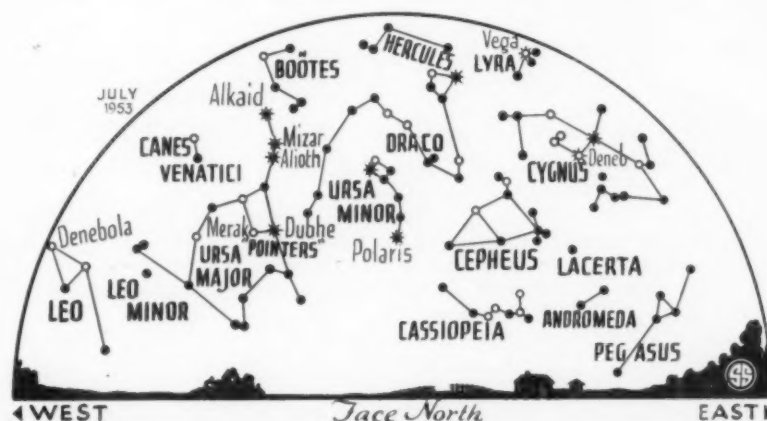
The constellation of Libra, the scales, next to the right and also one of the zodiacal constellations, is associated with Scorpius and, in fact, was once part of it. "Libra" means the scales, yet the Arabic names of the two brightest stars, Zubeneshamali and Zubenelgenubi, mean respectively the "northern claw" and the "southern claw."

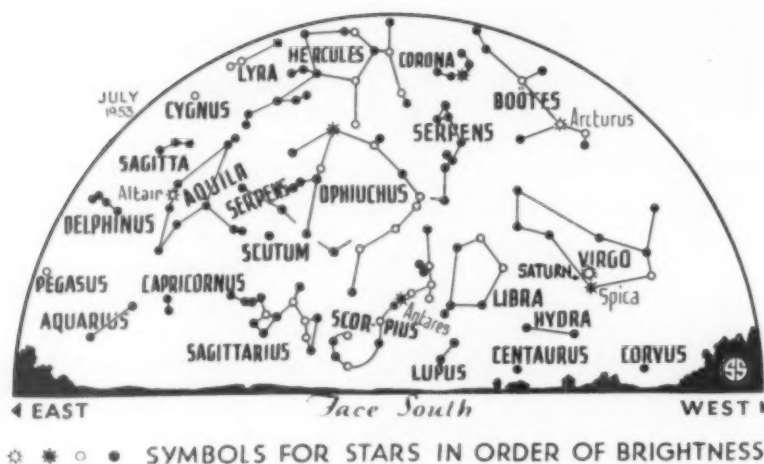
Thinking of these as part of a pair of scales, it is hard to understand the significance of these designations. However, when we realize that once the claws of the scorpion extended up into this part of the sky, they become more appropriate.

Two July Eclipses

The month of July brings two eclipses, though it is very unlikely that many of our readers will see the first one. This happens on the night of July 10. The dark inner core of the moon's shadow, inside which the sun would be completely hidden, fails to reach the earth at all.

However, over a large area around the North Pole and the Arctic regions, including northwestern Canada, eastern Alaska and northern Greenland, the outer part of the shadow will extend, and there a partial eclipse of the sun will be observed. At its maximum only about a fifth of the solar diameter will be covered, so it will not be of any great scientific interest.





The month's second eclipse is a total one of the moon, which occurs when that body enters the shadow of the earth on July 26. At 5:32 a.m. EST, the moon begins to enter the shaded region, and that, of course, will be after the moon has set and the sun has risen in the eastern part of the nation. In the Midwest, especially the more westerly parts, it should be possible to see the partially eclipsed moon low in the west shortly before dawn.

Still farther west, in the Rocky Mountain states, it may even be possible to see it totally eclipsed. The mid-eclipse occurs at 7:21 a.m. EST, which is 4:21 Pacific Standard time.

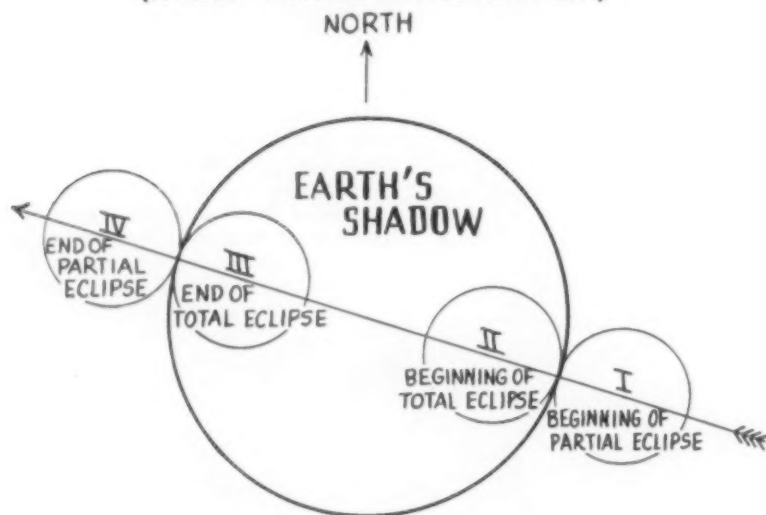
At San Francisco, sunrise occurs that day about 5:00 a.m. PST, so along the Pacific

Coast the beginning, at least, of the total phase should be easily visible, provided one happens to be up at that early hour!

Celestial Time Table for July

July	EST	
3	5:03 p.m.	Moon in last quarter.
5	1:00 p.m.	Earth farthest from sun, distance 94,450,000 miles.
7	7:44 a.m.	Moon passes Venus.
8	6:15 a.m.	Moon passes Jupiter.
10	9:28 p.m.	New moon, partial eclipse of sun visible in Arctic regions.
16	10:00 a.m.	Moon farthest, distance 251,600 miles.
18	7:43 p.m.	Moon passes Saturn.
	11:47 p.m.	Moon in first quarter.
22	5:00 p.m.	Venus passes Jupiter.
26	7:20 a.m.	Full moon, total eclipse of moon visible from western U.S.

TOTAL ECLIPSE OF MOON, JULY 26, 1953 (PARTLY VISIBLE IN WESTERN U.S.)



The large circle represents the shadow of the earth, and the small circles, I, II, III and IV, indicate the successive positions of the moon as it passes through the shadow. North is toward the top. Phases III and IV are not visible in the far western states. The four phases shown occur at the following times:

I	4:32 a.m. CST	3:32 a.m. MST	2:32 a.m. PST
II	5:30	4:30	3:30
III	7:11	6:11	5:11
IV	8:09	7:09	6:09

28 9:00 a.m. Moon nearest, distance 225,200 miles.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, June 27, 1953

TECHNOLOGY

"Water Wings" Lift Small Boats From Water

See Front Cover

► THE SMALL boat skipping across the cover of this week's SCIENCE NEWS LETTER is one of the Navy's experiments with hydrofoils. Currently under test at the Naval Air Station, Patuxent River, Md., hydrofoils are wing-like structures that act in water similar to the way airplane wings act in air.

Although they produce considerable drag at slow speeds, "water wings" can actually lift boats from the water, sharply reducing overall resistance. This permits boats to travel faster than they could with their hulls plowing through the water.

Science News Letter, June 27, 1953

ELECTRONICS

Radio Circuits Built in Tiny, Replaceable Units

► RADIO, TV and other electronic sets of the future can be built of small, replaceable and standardized units assembled without soldering. Parts of circuits would be replaced like tubes.

The National Bureau of Standards is investigating a novel method of cellular electronic construction proposed by Dr. P. J. Selgin of its engineering electronic laboratory. The new method makes full use of printed electronic circuits, also a Bureau of Standards development.

Individual molded cells of plastic, less than an inch on all sides, contain one or two circuit elements, such as resistors, capacitors and inductors. Each of these cells has three contacts, one on the top and two on the bottom. These press against the printed or etched circuits that replace conventional wires. The springs that keep the units in place are extensions of the tube socket contacts.

Twelve cells of this sort are assembled in a block along with two electron tubes. Electronic mechanisms are assembled from such blocks. When trouble occurs in any place, the offending cell is simply replaced by a spare and the repair is made.

The Navy Bureau of Aeronautics is supporting the development to improve construction and maintenance of electronic equipment. Printed circuits got their start in the research that gave our armed forces the proximity fuse, which bursts a shell when it comes near a plane or other target even if it does not hit it. The proximity fuse was also a Bureau of Standards development.

Science News Letter, June 27, 1953

METEOROLOGY

No A-Bomb Weather Effect

► DR. VINCENT J. SCHAEFER, the original cloud seeder and rain maker, told SCIENCE SERVICE that he doubted very much whether the debris from an A-bomb explosion had anything to do with the recent series of tornadoes.

"From what I know about these explosions," he said, "I doubt if they could produce material which would make very good rain-making material. Silver iodide is the best, and I doubt if there were a lot of things as good as silver iodide."

Dr. Schaefer pointed out that the explosions kicked up some dust which is one of nature's instruments for making rain storms.

"But," he said, "the dust in an ordinary dust storm is so very much greater in amount than the little bit kicked up by an A-bomb explosion that I cannot see how the bomb's dust could have any effect on general weather conditions."

Weather Bureau experts point out that a tornado is only a relatively small by-product, in terms of energy, of general stormy conditions which spread over several states. The Michigan and Ohio tornadoes, for instance, were offspring of the stormy conditions over the Great Lakes states. When these conditions moved eastward, they spawned the tornado which took so many lives in Worcester, Mass.

This general stormy condition releases energy equal to many hundreds of thousands of A-bombs, they point out, and it is the product of even greater forces at work in our atmosphere over the entire northern hemisphere. A tornado itself, destructive as it can be, is a relatively puny thing, even beside an A-bomb. Averaging about 100 yards wide, about a mile high and traveling about 15 miles, it has energy only two to three percent of that of an A-bomb.

One thunderstorm is much more powerful, equal to about 50 A-bombs. Thunderstorms and hail storms are also products of such general stormy conditions as produced the recent tornadoes.

Finally, the meteorologists say, similar A-bomb tests at a similar time last year were accompanied by only an average number of tornadoes.

Having heard so much about rain mak-

ing and the claims of being able to change the weather with a few pounds of silver iodide sprayed into the air, people very naturally believe that an A-bomb explosion might be connected with a tornado. Yet it

would seem that an A-bomb does not produce the kinds of material which, according to the rain makers, could influence the weather, and that the forces responsible for the tornadoes are in fact many times more powerful than man's puny efforts with the atom.

Science News Letter, June 27, 1953

At jet engine operating temperatures, ordinary steel burns like paper.

PLANT DISEASES

In Orchard, Nursery and Garden Crops

by ERNEST GRAM and ANNA WEBER

A classic reference work for the practical man, the grower, the nurseryman, the market gardener; for agricultural colleges and associations, horticultural research stations, libraries and students; and all interested in the growing of fruit, flowers, vegetables, ornamental plants and trees.

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Injuries by low temperatures, frost and severe winters
Lightning damage
Light
Mechanical damage
Damage by heat
Nutrition and other chemical factors
Lime
Nutritional deficiencies and excesses
Aluminium
Arsenic
Boron
Calcium
Chlorine
Copper
Iron
Lead
Lithium

Magnesium
Manganese
Mercury
Molybdenum
Nitrogen
Oxygen
Phosphoric acid
Potassium
Sulphur
Zinc
Ammonia poisoning
Poisoning by coal gas
Injury by therapeutic chemicals
Injury by other chemicals
Damage by industrial fumes and smoke

SOIL SICKNESS Living causes of disease Biological classification of parasites

Fungi
Grey mould
Verticillium wilt
Powdery mildews
Root rot, foot rot and damping off
Rust fungi
Sclerotinia rot
Bacteria
Crown gall
Virus

THE SOURCE and DEVELOPMENT of PLANT DISEASES

Resistance and immunity to plant diseases
The role of plant breeders

THE ECONOMIC IMPORTANCE of PLANT DISEASES

DISEASES of TREE AND BUSH FRUIT

DISEASES of VEGETABLES and HERBACEOUS FRUIT

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ASTM STANDARDS ON PLASTICS—ASTM Committee D-20 on Plastics—*American Society for Testing Materials*, 705 p., illus., paper, \$5.25. Sets forth 135 standards, including specifications, definitions, methods of testing and nomenclature for a wide range of plastics.

BUILDING AMERICA'S HEALTH—President's Commission on the Health Needs of the Nation—*Health Publications Institute*, 143 p., paper, \$1.50, cloth \$2.50. A one-volume condensation of the official five-volume report, this contains all the findings and recommendations plus summaries of the other four volumes.

CATALOG OF THE CYCLE COLLECTION OF THE DIVISION OF ENGINEERING, UNITED STATES NATIONAL MUSEUM—Smith Hempstone Oliver—*Govt. Printing Office*, 40 p., illus., paper, 40 cents. Not only a catalog, but also a history of the development and usage of cyclic vehicles from 1816 to the present time.

CHANGING MILITARY PATTERNS ON THE GREAT PLAINS: 17th Century Through Early 19th Century—Frank Raymond Secoy—*Augustin, American Ethnological Society Monograph XXI*, 112 p., \$2.75. Shows each of the various military technique patterns of the Indians of the Great Plains, with emphasis on the changes brought about by the introduction of the horse and the gun.

CHILD PSYCHOLOGY—Lester D. Crow and Alice Crow—*Barnes & Noble, College Outline Series*, 267 p., paper, \$1.50. Summary of research on the development of children from pre-birth growth through early adolescence. With review questions and answers.

CITY PLANNING IN SOVIET RUSSIA: With an Interpretative Bibliography—Maurice Frank Parkins—*Univ. of Chicago Press*, 257 p., illus., \$6.00. Reviews the development of urban planning in the U.S.S.R. from its historical, legal, economic and political aspects.

COLLEGE PHYSICS—Frederick A. Saunders and Paul Kirkpatrick—*Holt*, 4th ed., 603 p., illus., \$6.25. A thorough revision of "A Survey of Physics," this gives added emphasis to atoms and related matters.

DOING SOMETHING FOR THE DISABLED—Mary E. Switzer and Howard A. Rusk—*Public Affairs Committee*, 28 p., illus., paper, 25 cents. Shows the vast economies that can be achieved through application of modern methods of rehabilitation.

DOWN-EAST SPIRITUALS AND OTHERS—George Pullen Jackson—*Augustin*, 2nd ed., 296 p., illus., \$6.00. A collection of some 300 religious folk songs in the New England tradition, an area which the author says is the ancestral home of spirituals.

EDUCATION FOR THE TALENTED IN MATHEMATICS AND SCIENCE—Kenneth E. Brown and Philip G. Johnson—*Govt. Printing Office*, Office of Education Bul. 1952, No. 15, 34 p., paper, 15 cents. A report of a Joint Conference of the Cooperative Committee on the Teaching of Science and Mathematics of the AAAS and the U. S. Office of Education.

FUNDAMENTALS OF PHYSICAL SCIENCE: An Introduction to the Physical Sciences—Konrad B. Krauskopf—*McGraw-Hill*, 3rd ed., 694 p., illus., \$6.00. Intended for the non-science student, this provides the main facts in the fields of astronomy, physics, chemistry and geology.

GUIDES TO MEETING TOMORROW'S PRODUCTION NEEDS—M. J. Doohar, Ed.—*American Management Assoc.*, 64 p., paper, \$1.25. Contains articles on Federal Controls by Michael V. DiSalle, After Defense Spending—What? by Walter Williams, and a panel discussion on Automation to Date: Progress Toward the Push-Button Factory.

HEBREW MARRIAGE: A Sociological Study—David R. Mace—*Philosophical Library*, 271 p., \$6.00. A study of Hebrew ideas and ideals concerning sex, marriage, parenthood and family life.

INDUSTRY ENTERS THE ATOMIC AGE: Some Practical Problems in Applying Atomic Energy—M. J. Doohar, Ed.—*American Management Assoc.*, 31 p., paper, \$1.25. Articles on The Atomic Energy Industry, The Use of Radioisotopes in Manufacturing Operations, The Place of the Manufacturer in Atomic Energy and The Meaning of Atomic Energy to Industry.

LABORATORY PROBLEMS IN GENERAL CHEMISTRY—Howard Nechamkin—*Crowell*, 274 p., illus., \$2.50. Intended to prevent the college student from doing his laboratory work by "cribbing," the "unknowns" have been so selected that they may be altered easily from class to class and so that "correct" answers are not readily available in texts or handbooks.

MYTHOLOGY—Edith Hamilton—*New American Library*, 335 p., illus., paper, 50 cents. The classic stories of Greek, Roman and Norse mythology.

PRINCIPLES OF COLOR PHOTOGRAPHY—Ralph M. Evans, W. T. Hanson, Jr., and W. Lyle Brewer—*Wiley*, 709 p., illus., \$11.00. Provides a basis for understanding color photography, with main emphasis on the underlying fundamental principles and unique problems.

REFRIGERATION IN AMERICA: A History of a New Technology and Its Impact—Oscar F. Anderson, Jr.—*Princeton Univ. Press*, 344 p., illus., \$6.00. Covering the period 1750 to 1950, this shows the relation of refrigeration to our national development, records the main trends in technological progress, etc.

A REVIEW OF THE BEETLE FAMILY CEPHALOIDAE—Ross H. Arnett, Jr.—*Smithsonian Institution, U. S. National Museum Proceedings*, Vol. 103, No. 3321, 6 p., illus., paper, free upon request direct to publisher, Washington 25, D. C. Reconsiders the taxonomy, affinities, and distribution of this group.

SPIRITUAL FOLK-SONGS OF EARLY AMERICA—George Pullen Jackson—*Augustin*, 2nd ed., 254 p., illus., \$6.00. Contains 250 folk songs, each annotated with all available information on the "ancestry and progeny of text and tune."

SPRAY-TYPE DISHWASHING MACHINES—Joint Committee on Food-Equipment Standards—*National Sanitation Foundation*, 46 p., illus., paper, 50 cents. Standards set up by the NSF as to what methods of washing dishes, utensils and glasses are satisfactory from the health point of view for use in public eating places.

THE STABILITY OF ROTATING LIQUID MASSES—R. A. Lyttleton—*Cambridge Univ. Press*, 150 p., illus., \$6.50. Reaches the conclusion, contrary to Jeans' view, that the dynamical evidence is against the fission hypothesis of formation of binary systems.

STATISTICAL SUMMARY OF EDUCATION, 1949-50—Rose Marie Smith—*Govt. Printing Office*, 52 p., paper, 20 cents. An abstract (with brief interpretive comments) of data collected by the Office of Education and other agencies from over 170,000 educational institutions.

TABLE OF ARCTAN X—*Govt. Printing Office*, National Bureau of Standards Applied Mathematics Series 26, 170 p., \$1.75. This table of arctan x is believed to be the most comprehensive yet published. Applications include, in mechanics, plotting the vertical rise of a projectile.

TABLES FOR ROCKET AND COMET ORBITS—Samuel Herrick—*Govt. Printing Office*, National Bureau of Standards Applied Mathematics Series 20, 100 p., \$1.75. To prepare for the anticipated development of rocket navigation, which focuses attention on rectilinear motion in the two body problem, these tables are presented.

THE TRUE BOOK OF ANIMALS OF SMALL POND—Phoebe Erickson—*Childrens Press*, 44 p., illus., \$2.00. Follows the small animals of a pond in Connecticut through the seasons. Reading level for Grades 2 and 3.

THE VERTEBRATE FAUNA OF THE SELMA FORMATION OF ALABAMA, PARTS III & IV: The Turtles of the Family Protostegidae and The Turtles of the Family Toxochelyidae—Ranier Zangerl—*Chicago Natural History Museum, Fieldiana; Geology Memoirs Vol. 3*, Nos. 3 and 4, 306 p., illus., paper, \$6.00. Material based on the fossils found in the Mooreville Chalk of the Selma Formation.

THE WORLD OF PRIMITIVE MAN—Paul Radin—*Schuman*, 370 p., \$5.00. Describes aboriginal peoples in terms of their rational behavior and their positive achievements.

Science News Letter, June 27, 1953



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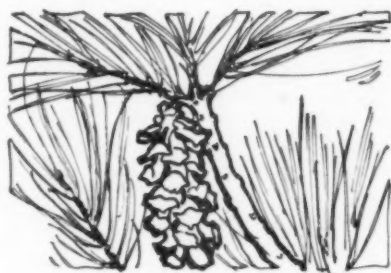
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Before the Eagle

► ALTHOUGH THIS country has no national tree, as England has the oak and Canada the maple, a tree was used as symbol of American honor and independence long before the eagle was officially adopted as the device to be used on the Great Seal of the United States, and subsequently on our coinage and currency.

Until the Continental Congress adopted a national flag and specified its basic design, each state flew a flag of its own. The flag of Massachusetts, which floated over the stoutly defended breastworks at Bunker Hill, consisted of a white field displaying a green pine tree, with the motto: "An Appeal to Heaven."

This motto was suggested, no doubt, by the upward-pointing spire of the tree, so like the monitory steeples that reared themselves above all New England villages.

Even before it appeared on their flag, the pine tree was used as a symbol on the coinage of Massachusetts Bay Colony. The Pine Tree Shilling, struck in the seventeenth century, is one of the greatest of numismatic treasures.

Which particular pine tree was thus chosen for honor by the men of Massachusetts is not specifically stated, but there can

be little doubt that it was the white pine. It was abundant in early days, it had great majesty and beauty, and was useful and valuable as well as beautiful.

Towering trunks cut from virgin forests made magnificent masts—important in a seafaring and shipbuilding community. Smaller specimens were hewn into logs for the early cabins, sawed into splendid, smooth lumber for the fine frame houses and churches that have made New England's early builders deservedly famous.

But, alas, we could no longer adopt the white pine as our national tree even if we wanted to. For just as we have practically exterminated the American eagle from all save a few still-wild spots under American sovereignty, so have we wiped out most of our white pine forests.

We have either prodigally chopped them down without taking the trouble to replant them, or more wastefully still, have permitted fire to ravage them unchecked. And the spread of a terrible tree disease, white pine blister rust, has made re-establishment of white-pine woodlands even more difficult.

Science News Letter, June 27, 1953

MEDICINE

Polio Reports Inflated

► WE ARE having an inflation in polio cases reported. Gamma globulin, the material in blood that may protect against paralytic poliomyelitis, is probably responsible.

Total cases of poliomyelitis reported to the U. S. Public Health Service each week this season are running considerably above the cases reported about the same period last year. This makes it look like a bad polio year.

A "high proportion" of cases, however, are nonparalytic, and it is the nonparalytic cases being reported that are inflating the totals.

In the past, many nonparalytic cases undoubtedly did not get reported. Maybe the doctor was not sure whether the case was polio. More likely the parents did not call a doctor, thinking Junior's illness was just a summer cold or one of those feverish, upset stomach spells that children so often get for no apparent reason.

But today if Junior has a little fever, an upset stomach or headache, or all three, mother calls the doctor, hoping to get gamma globulin for Sister and any other children in the family. And the doctor, wanting to give his young patients every possible protection, reports the case to the state health department so that he can get some gamma globulin.

Junior probably has nonparalytic polio. Even without laboratory tests, there are signs by which the doctor can diagnose the ailment. The point is that with gamma globulin in the picture, doctors apparently are being called much oftener than in the past for cases of nonparalytic polio. So the total cases being reported this year are

Questions

ASTRONOMY—How many planets are visible during July? p. 395.

...

CHEMISTRY—How many organic compounds are now being produced? p. 392.

...

ENGINEERING—What is the chief economic advantage of trolleys? p. 393.

...

MEDICINE—What is a recent clue to spread of leprosy? p. 392.

How might typhoid "shots" protect against radiation damage? p. 394.

...

Photographs: Cover, U. S. Navy; p. 391, Clifford E. Matteson; p. 393, Fremont Davis; p. 394, Museum of Science and Industry; p. 400, Minnesota Mining and Manufacturing Co.

YOUR SKIN AND ITS CARE

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❁ **RUBBER DISKS** two inches in diameter are nailed to concrete form boards and produce undercut niches in the solidified concrete. When the form boards are pulled away, the disks pull out too, leaving niched, spoked holes in the concrete that become anchors for plaster. This does away with the need for wood lath, metal lath or roughening.

Science News Letter, June 27, 1953

❁ **CAMPING MATTRESS**, made of a vinyl plastic, folds into a small convenient package. When inflated through its rust-resistant metal valve, the mattress measures 24 inches by 74 inches and fits into most sleeping bags. Its tufted design helps it keep its shape under varying body pressures, and makes sleeping on rough ground more comfortable.

Science News Letter, June 27, 1953

❁ **FLAME-SPRAY GUN**, now under development, shoots porcelain material through an acetylene torch and fuses it to steel, giving the steel long-lasting protection against sea water, weather, smoke and chemicals. The tool promises to be useful in treating big structures such as bridges, ships and buildings.

Science News Letter, June 27, 1953

❁ **ABRASIVE FILE** uses a roll of abrasive cloth instead of conventional file teeth for deburring and other filing and finishing



operations. The device features an 11-inch stroke, holds a roll of cloth more than six feet long, gives faster cutting, greater economy and more versatility through a wide choice of grits, the manufacturer says. It is shown in the photograph.

Science News Letter, June 27, 1953

❁ **SPORTSMAN'S SERVICEKIT** contains 37 items to meet practically any emergency the hunter or fisherman might

encounter in the field. The kit is pocket sized, weighs 10 ounces and is relatively inexpensive.

Science News Letter, June 27, 1953

❁ **NEW BOW TIE** antenna for ultra-high frequency television compares favorably with UHF corner reflector type arrays, meant for extreme fringe areas, the maker reports. The bowtie part of the antenna is set in a wire radar-like reflector which increases receiving power and minimizes snow and ghost-producing signals.

Science News Letter, June 27, 1953

❁ **RUST-CONTROLLING OIL**, formerly available only to industry, now can be bought in convenient household sizes to combat corrosion and tarnish stains on brass, copper and automobile chrome. Rust action is stopped when the oil is applied to steel sashes, screens, hardware, garden tools and metal furniture.

Science News Letter, June 27, 1953

❁ **DISPENSER** for coffee and other free-flowing products such as flour, sugar and cereals, helps keep the housewife's kitchen tidy. At a turn of the handle, the dispenser measures out one level tablespoonful of coffee. The device holds from two to three pounds of coffee in its air-tight reservoir keeping it fresh.

Science News Letter, June 27, 1953



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Do You Know?

Some 4.3 trillion gallons of rain wet the U. S. each day.

If candles are dipped in thinned shellac, they should not droop during hot weather.

Once in a great while, a female "worker" bee will emerge from unfertilized eggs of African queen bees.

New rust-removing chemicals speed some car repair jobs as much as 20% by loosening nuts on corroded bolts.

One of every 10 fire engines made by a large manufacturer is not painted red; for instance, an individualistic customer recently ordered a "lilac number."

The super-giant star, Antares, has a diameter twice as great as that of the earth's orbit.

Synthetic fibers now are being made of limestone as well as of glass and coal.

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ACTH	191, 229, 358
AD-X2	231, 247, 263, 278
AGF	358
Agott, Kenneth H.	381
Bomb	37, 50, 165, 166, 190, 193, 195, 245, 397
Bomb, Russian	141
Bomb detection	81, 85, 133, 141, 198
Abraham, E. P.	151
Accidents	50, 329
Ado, N. C.	50
Admiration, Need for	313
Aousto-Electric effect	242
Adors	19
Adhesive, Resin	224
Adrenal glands	152, 344, 358
Adrenalin, Radioactive	88
Adrian science	239
Ading, Chemical	334
Adnals	141
Adnre, Alejandro	133
Adnre, Jerry	144
Adnre, conditioning	144
Adnre, flow speed	261
Adnre, Layering	382
Adnre, pollution	87
Adnre, Ian	265
Adnre, Robert B.	88
Airplane, Plastic	131
Airplane, Turbo-prop	151
Airplane equipment	86
Airplane escape	328
Airplane model tests	363
Airplane wing deicer	175
Airplanes	3, 6, 7, 57, 78, 104, 149, 197, 229, 276, 280, 305, 309, 378
Airplanes, Bad-weather	292
Airplanes, Future	341, 347
Akeley, L. T.	393
Albee, William	215
Alcohol	16, 121, 239, 265
Alcohol sponging	339
Alcoholism	41, 329
Alexander, A. L.	206
Alexander, R. A.	303, 346
Alexander, Thomas F. N.	226
Algae	128, 226
Allen, Alvah D.	314
Allergy	15, 296, 297, 307, 317
Alloy	150, 215
Alpha counter	288
Altitude, Effect on heart	296
Amebic dysentery	99
Ammoniated	164
Amnifurics	208
Anatomical models	14
Anderson, Carl D.	245
Andrews, Howard L.	234
Anderson, M. S.	296
Anemia	281, 302
Anesthetic, Indian	33, 40, 45, 112, 327, 331
Animals	275
Anker, Rudolph	84
Ankle sprain	362
Antarctic exploration	40, 76
Antennas	57, 77, 99, 116, 123, 162, 184, 264, 343
Antibiotics	152, 216, 376
Anxieties	277
Appetite Center	240
Apron, Baby	213
Arctic Ocean	178
Argon	313
Arguments, Presenting	67
Armstrong, George E.	376
Army worms	243
Arnold, Paul Dean	79, 149, 270
Artery	92, 137, 214, 313, 348, 358, 381
Arthritis	254
Aserinsky, Eugene	280, 358
Aspirin	135, 136, 137, 180, 201
Assail, Nicholas S.	12, 287
Asteroid	231, 247, 263, 278, 279, 294
Asthma	117, 119
Astn, A. V.	37
Athletes	100
Atmosphere, Chain	102
Atmosphere, Models of	14, 323, 351
Atmospheric tides	232
Atom	76
Atom smasher	68, 85, 110, 183, 190, 257, 271, 340, 359
Atomic age dangers	45, 394
Atomic power	319
Atomic submarine	313
Atz, James W.	51
Audience counter	380
"Audrey"	34
Augustine, Robert W.	313
Aureomycin	121
Authoritarian	48
Tendency toward	147, 275, 277, 381
Automobile-Airplane	329
Automobile, Toy	375

Automobiles	60, 106, 168, 230, 309, 329
Autopilot, Robot	197
Axelrod, Julius	375
Azalea	209, 216
Baade, Walter	242
Babies	365, 376, 381, 386
Babies without papa	132
Baby, Crying	309
Baby, Sex of	345
Bacteria	28, 385
Bag, Thermal	372
Bail, Meridian R.	57
Balloons, Weather	136
Balloons, N. E.	176
Balm, Adhesive	153
Banana disease	168
Barn	118
Barnes, Virgil	120
Everett, Jr.	232
Baseball training devices	358
Bates, Paul L.	213
Bath, Jean	279
Bathub	231, 247, 263, 278
Batigne, Rene	327
Battery additive	151
Battle, Wingate	216
Bauer, Louis H.	8
Baume, Louis J.	104
Bayne, J. R. D.	99
Beacons for airplanes	134
Beal, John M.	337, 338
Beef grading	361
Bees	165
Beetle	335
Beggs, Eugene W.	185
Beinhart, E. G.	279
Beisser, Paul T.	41
Bellinger, Louisa	390
Bellows, R. M.	392
Bennett, Leslie R.	269, 371
Bennett, W.	265
Benson, Ezra T.	43
Bentall, H. H.	317
Bergren, Roy	5, 281
Berlin, Ivan C.	184
Berlin, N. I.	312
Bernfeld, Peter	14
Berry, Verne H.	164
Bethe, H. A.	319
Bibby, B. G.	233
Bicillin for syphilis	307
Bieh, Gerald L.	393
Birch, Francis	345
Birch, L. W.	308
Bird, Roland T.	32, 55, 86, 117, 192, 211, 273, 275
Bird, Extinct	327
Birds	364
Birnbaum, George	212
Birth control method	165
Bivins, James A.	77
Blackett, P. M. S.	297
Blake, John T.	390
Blatt, Herman	36
Bleaching skin	312
Bleeding, Stopping	249
Blindness	348
Blinn, R. C.	214
Bloch, Hubert	88, 152, 386
Block, Matthew	361
Blood	297
Blood albumin	238
Blood cell test	149
Blood clots	365
Blood flow, Measuring	254, 293, 184, 200
Blood pressure	47
Blood prints	265
Blood stains	211
Blood substance X	265
Blood type A	211
Blood vessels	134
Bloodhound	232
Bloom, William	119
Blueprints	56
Boak, Ruth	389, 396
Boats	133
Bohart, Richard M.	23
Bok, Bart J.	269
Bomb bay door	297
Bomb blast effect	37
Bombing trainer	293
Bond, Donald S.	104
Bone	325, 364
Bone, Formation in	118
Bones, Dead	346
Bones, Early human	37, 133, 156, 214
Bones, Rhinoceros	117
Boot, Cold Weather	64
Bornstein, Maurice	185
Botsford, Thomas W.	185
Bottle cap-spout	96
Bottle holder, Baby	327
Bower, Albert G.	378
Bowle, S. H. U.	150
Box opener	272
Boyd, Allen	386
Boys, School age	37
Brackett, James W., Jr.	200
Bradford, Lowell W.	200
Braham, William E.	131
Brain	147, 275, 277, 381

SCIENCE NEWS LETTER

Index - Vol. 63

Nos. 1-26-January to June, 1953

Published by

Science Service, Washington, D. C.

Lift out and insert in binder at beginning of volume.

Buddingh, John	328
Buffalo	226
Bugs	387
Building material	114
Mineral	256
Bullard, E. C.	328
Bulletin board	320
Magnetic	320
Bullock, Theodore	136
Bunney, L. R.	193
Burchenal, Joseph H.	246
Burnet, A. M. R.	105
Burns, R. E.	307
Burrage, Walter S.	296
Burris, R. H.	25
Buses	383
Busis, Sidney N.	281
Bussey, H. E.	327
Byrd, Richard E.	243, 362
Cabbage	120
Cabinet, Catch-All	160
Cables, Underground	77
Cactus	270
Cadmium in kidneys	237
Calories, Allowance of	191
Calves, Diseases of	34
Camp, W. H.	302
Cancer	25, 34, 54, 72, 76, 89, 103, 114, 121, 141, 148, 153, 168, 178, 196, 201, 215, 227, 232, 260, 265, 275, 278, 280, 281, 291, 297, 301, 362, 363, 365, 366, 375, 378, 390
Cancer cells	249
Cancer detection	226
Cancer grafts	254
Canfield, Gordon	105
Cantarow, Abraham	149
Cantelo, William W.	73
Canyons under Atlantic	297
Car starter	32
Carbon-14	39, 376
Carbon dioxide	75
Radioactive	119
Carlson, H. C.	162
Carlmichael, Leonard	154, 162
Carol, J.	60
Carpenter, L. G.	73
Carroll, Wyman	14
Carruthers, Christopher	378
Carter, George F.	54
Cassidy, Harry Joseph	117
Catastrophes, from A-bomb	165

Catastrophe, Planning	306
Caterpillars, Tent	391
Cattle, A-bombed	156
Cattle disease	34, 86
Cells	17, 24, 25, 40, 46, 114, 121, 168, 197, 232, 317, 334, 358
Cements, Plastic	48
Ceramic fuel	183
Cerebral palsy	325
Cerenkov, P. A.	165
Cerium	199
Cesium, Radioactive	54
Chace, Fenner	68
Chace, Marian	344
Chains, Tire	8
Chair, Nylon-Cord	32
Charles, Don C.	264
Charney, Julie	198
Cheese	391
Chemical, Plant growth	335
Chemical eye	168
Chemicals, Organic	392
Chemistry of brain	147
Chemist's aid	180
Cherry blossoms	178
Chicken	394
Childers, Norman	9
Children	26, 101, 152, 216, 292
Chilton, Thomas H.	390

Concrete form	400
Concussion, Treating	88
Condon, E. U.	231
Conklin, Dean S.	329
Constellations	266, 395
Container, Shipping	176
Convertible top raiser	256
Cook, Robert C.	379
Cooper, Irving S.	391
Corey, Robert B.	67, 150
Corey, Robert J.	303
Corn, Closest relative of	62
Corn crop	207
Corn meal dishes	318
Cornell, L. W.	312
Corrosion retarder	272
Cortisone	8, 15, 142, 191, 229, 280, 297, 361
Cosmetics	101, 290
Cosmic rays	165, 323, 391
Cotton	345, 365
Coughs	376, 380
Coupler, Electronic	160
Court, Arnold	63
Cowgill, William H.	57
Cowles, Raymond B.	233
Cows	191, 216
Cox, Herald R.	230
Cox, James W.	264
Crafts, Alden S.	381
Crash protection	206, 217
Crenshaw, Gerald L.	371
Cross, R. J.	230
Cuerrier, J. P.	183
Cunningham, Leland	201
Cup, Training	208
Curry, Charles F.	246

DDT	292, 376
Dancing	344
Daniels, Farrington	340
Davidson, Henry A.	317
Davis, K. H.	51
Dawson, C. R.	325
Day, Albert M.	279
Death detector	134
Deaths	41
deBodo, R. C.	387
DeBoer, C.	184
DeForest, Lee	170
Delassio, L. P.	220
Densitometer	134
Dental fillings	30
Dentists	137
Deome, Kenneth B.	281
Desmond, Thomas C.	324
Detergents	184
Deuel, Harry J., Jr.	187, 245
Developing film	347
Dewhurst, Harold	87
Diabetes	360
Dickson, Frederic H.	290
Dictating machine	320
Diesel fuel	48
Diesels	265
Diet	41, 61, 142, 179, 260, 270
Diet, Radiation	245
protection	351
Dietrich, Harry F.	223
Dill, R. S.	75
Dingle, Nelson	336
Dining table	110
Diphtheria	347
immunization	312
Disgrace	5
Disaster feeding	224
Disease, Emotional	313
stress	277
Dish drainer	144
Doerner, Konrad	122
Dock-Barge	64
Doctors, Training of	83
Dodge, Henry W., Jr.	71
Dodrill, F. D.	151
Dogs	57, 113, 120, 179
Dole, Vincent P.	168
Doll, H. A.	262, 368
Dornfield, Ernst J.	136
Dougherty, Thomas F.	316
Doughnut former	135
Doust, John Lovett	56
Dow, Frank	307
Downey, B. R.	56
Dubach, H. W.	201
Duck hunting	47
Dudley, H. C.	351
Duncan-Taylor, J. E.	261
Dunes	24
Dunkle, R. V.	153
Dunlap, Jack W.	249
Dunlap, V. C.	50, 339
Draft	254
Dreams	7
Drinking drivers	288
Drip-catcher	227
Dripoliator inventor	183
Driver training device	55
Drivers, Alarm for	41
Driving license	351
Drowning	120
Drucker, Philip	375
Drugs	7, 9, 246, 281, 375
Dysentery	264

E. M. Q.	316	Floods in Lowlands	98	Grass	226, 243	Hoback, William W.	348	Kalmus, Henry P.	149
EQ-53	12	Flowers	218, 220,	Greathouse, Glenn A.	376	Hobbs, William Herbert	297	Kanner, Leo	292
Ear protector	203	250, 255,	236	Green, D. M.	328	Hobby, Oveta Culp	105,	Kaplan, Joseph	91
Earth, Age of	29	Flowmeter	149	Green, David E.	200	Hochberg, Carol Barnes	16	Keafman, William	21
Earth, Early	181, 345,	353	88	Green, Maurice	385	Hoch-Liget, Cornelia	254	Keller, Allen	347
Earth, Size of	213	Fly trap	200	Green, Thomas W.	348	Hodges, Fred J.	57,	Keller, K. T.	261
Earthquakes, Miniature	220	Flying in Alaska	248	Greenblatt, Milton	264	Hodgkin's disease	385	Kelly, Vincent C.	255
Earth's core	148, 307,	323	243	Greenhouse, Automatic	349	Hoffman, Howard	76	Kellgren, J. H.	280
Easter lilies	220	Flying saucers	148, 184,	Griffin, A. Clark	335	Hogbe, W. W.	95	Kelly, M. J.	358
Ebeling, Walter	378	Flying suit	131	Griggs, David	183	Holland, Glen	214	Kemp, C. Henry	247,
Eber, Laurence E.	103	Foam Man	133, 344,	Griswold, Dwight	103	Hollander, W. F.	243	Kerr, Paul F.	248
Eble, E.	99	Food	27, 30, 100, 244,	Grob, David	148	Holmes, Thomas H.	21	Key case	290
Eckert, W. J.	314	Food and Drug Adm.	278	Grove, William R.	56	Honey	344	Kidney, Metal in	336
Eclipses	74, 395	Food poisoning	27, 39, 215,	Growth rate, Vegetable	271	Hoover, William	370	Kiehn, Clifford L.	237
Eclipse, Star	74	Food preservation	134,	Growth stimulators	382	Hormones	34, 56, 104,	King, Ivan	325
Edwards, Robert M.	317	Foot and mouth disease	193,	Gruenberg, Ernest M.	121	Horne, J. E. T.	275, 362, 364,	King, Jean I. F.	19
Eels	78, 105	Foot valve	371	Guenther, Ruben H.	57	Hose valve	387	King, Thomas J.	94
Egloff, Gustav	392	Forbes, T. W.	128	Guided missiles	25, 153,	Hospital, Research	199,	Kirschner, Patricia	358
Einstein, Albert	38, 227	Forest fires	206, 334	Gulf of Mexico	229, 373,	Houses	103	Kirschbaum, Arthur	326
Eisenbud, Merrill	133	Forsham, Peter H.	191	Gun, Largest automatic	184	Howe, Howard A.	199,	Kitchen unit	227
Eisenhower, Dwight D.	71, 338, 354, 355,	371	156	Gun, Toy	135	Hoyle, L.	83	Kites	288
Electric charge	323	Foskett, L. W.	60	Guthrie, John D.	181	Hoyt, Avery S.	131	Kleitman, Nathaniel	335
Electrical conductivity	38	Fossil, Primate	208	Gyroscope	240	Hruza, Thelma	269	Klingman, Walter O.	254
Electricity, Pain-relieving	291	Foster, Edwin E.	331	H-bombs	37, 53	Hsu, Y. T.	44	Klump, Theodore G.	318
Electromagnetokinetic phenomenon	115	Fouling, Prevention of	201	Haber, Fritz	4, 110	Hub caps	254	Knives	224, 240,
Electron beams	297	Foundations, Non-Profit	282	Haber, Heinz	244	Huber, Ralph L.	105	Knout, Evelynne G.	329
Electronic flowmeter	149	Fox, Lauretta E.	390	Haenseler, Conrad M.	116	Hughes, Charles B.	34,	Koln, Alexander	378
Electronic units	396	Frank, Jules A.	282	Hainer, Raymond M.	276	Hughes, C. H.	297	Konecny, C. T.	115
Elephantiasis	200	Friedman, D. G.	112	Hall, John S.	114	Hummingbirds	137	Koppányi, Theodore	259
Ellenberg, Francis R.	232	Friedman, Louis L.	349	Hall, Robert N.	116	Humphreys, Curtis J.	169	Korff, Serge A.	113, 120
Elliot, S. B.	347	Frostbite	89, 104	Hall, Theodore P.	333	Hundley, James M.	312	Kotkin, Paul	345
Elliot, H. W.	147	Fruit fly	286	Halvorson, H. Orin	121	Hunt, Walter S. Jr.	364	Kraus, Daniel	301
Ellis, Elizabeth E.	61	Fruit flavors	100	Halvorson, Harry	243	Hurricanes	84, 394	Kraus, John	12
Elson, J. G.	265	Fumagillin	99	Hamid, Salah El-Din	197	Huseby, Robert	260	Kreutzer, Konrad O.	307
Elmore, Francis H.	331	Fungal, Chemical control	176	Hamilton, Roderick R.	38	Hutchins, L. H. Jr.	77	Krieger, Alex D.	344
Embryos	75, 121	Funerary	116	Hand, Wilfred C.	40	Hutton, William E.	196	Kron, Gerald E.	376
Emotion recorder, Theatre	255	Fungus	89	Handicapped persons	139	Hydrofoil	389, 396	Krugman, Saul	242
Emotions, Reaction to	313	Fungus-Caused diseases	176	Hanger	105	Hydrogen	39	Krusen, Frank H.	87
Emotions and cancer	366	Fungus remedy	89	Hannah, John A.	89	Hydrogen, Intergalactic	23	Kuhns, John G.	92
Emmswiler, Samuel L.	218	Funk, Casimir	262	Hansell, Clarence W.	50	Hydrogen atom	169	Kulp, J. Laurence	365
Enamel	224, 388	Fur, Chemical	64	Hansen, Don	104	Hynek, J. Allen	114	Kunkle, Charles	98
Encephalitis	378	Furniture polish	275	Hanson, F. R.	233	Hyrax	114	Kupfer, H. G.	246
Energy from matter	169	Fuselages	329	Hardy, James D.	229	I.Q.	164, 261, 264	Kurland, Leon	280
Enzyme chemistry	87	Futterman, Samuel	25	Hardy, L. Martin	229	Ibarra, Marcial	207	Ladd, George T.	169
Enzymes	25, 200	Fye, Robert W.	25	Hare, Hugh F.	343	Ice cream	136, 328	Ladybirds	205
Epidemics, Man-Made	75	Gahan, J. B.	52	Harley, John H.	133	"Ice-Cubelet" machine	49	Lamberston, Wingate A.	277
Epilepsy	9	Gahres, Edward E.	136	Harris, Saul J.	206, 217	Ice in clouds	64	Lampe, Isadore	54
Equipment, Electric	73	Galaxies	29, 36	Harrison, Louis P.	292	Ice islands	12	Lands, H. P.	128, 165
Escher, George C.	104	Gamma globulin	151,	Hart, Jeremy	117	Illness	213	Langer, Alexander	199
Evans, Florence L.	132	Gamow, George	191, 230, 248, 365	Hartwell, Carrier	239	Image brightener	306	Langmuir, Irving	179
Evans, Herbert M.	387	Garden	9, 234	Harvey, A. McGeehe	271	Indians, Treatment of	114	Langsdorf, Alexander, Jr.	110
Evans, Llewellyn T.	253	"Garden of Eden"	362	Harvey, Clarence C.	329	Influenza	35, 118, 131, 242	Lansing, Albert I.	334
Evans, Robert John	302	Garden, tiller	144	Hawes, R. R.	91	Infrared, "burner"	46	Laque, F. L.	168
Everhart, Donald L.	306	Garfinkel, Bernard T.	264	Hays, Silas B.	164	Inks, Acetate	304	Lark-Horovitz, Karl	170
Ewing, Maurice	102, 297	Garrison, Roy F.	339	Hay, fever	75, 265	Innersole	144	Lauer, A. R.	41, 105
Exhaust gas poisoning	57	Garvey, William David	152	Hayes, Mark	237	Insect killer	128	Law, L. W.	91
Eye trouble	291	Gas, Natural	10, 301	Haynes, Richard D.	137	Insect repellents	272, 320	Lawrence, John H.	272
Everly, George B.	277	Gasoline	42, 199	Head, Map of	35	Insecticides	12, 52, 229,	Lawrence, John S.	217
Eyes cause headaches	347	Gay, James R.	381	Headaches, Loss of	179	Insects	249, 336, 376, 378	Layzer, David	77
Fabricant, Noah D.	34	Generator	181	Hearing aid	98, 347, 379	Insomnia, Cause of	143, 287, 387	Lazo, Robert	29
Fabrics, Flameproofing	181	Gerlough, D. L.	148, 281	Heart, Effect of altitude	80	Inspection by FDA	333	Leak detector	192
Fabrics, Flammable	105	Germantum	62	Heart, Mechanical	296	Insulation	39	Lebo, Dell	325
Fabrics, Spotting fake	279	Germes, Resistant	170, 182, 333	Heart beat rate	379	Inventions	80, 372	Lechevalier, Hubert	126
Factories, Automatic	168	Gesell, Arnold	375	Heart disease	23, 41,	Inversion of air	118	Lecznar, Chester J.	248
Fails, Nancy	227	Gianola, Salvatore V.	295	Heart failure	114, 121, 241, 248,	Ion exchange	132, 318	Leddycotte, G. W.	215
Families, Failures of	185	Gifford, Frank A., Jr.	116, 238	Heart valve	265, 271, 283, 343, 375	Iron, Travel	144	Lee, Fred B.	248
Farley, John L.	279	Gillespie, Ethel E.	303	Hearts, Re-Starting	361, 380	Iron, compound	144	Lemert, Edwin M.	114
Farr, Lee E.	275	Gillespie, Jean E.	303	Heat detection	279	Iron, Isbell, H. S.	296	Lemons	104
"Faster-than-light writing"	307	Giltner, Leigh T.	169	Heat pump	132, 261	Isoniazid	6, 8, 127,	Leonard Oliver A.	249
Fat digesters	200	Ginsburg, Isaac	38	Heater, Radiant	233, 360	Israel, W. C.	134, 242	Leprosy	392
Fazekas, Joseph F.	259	Ginsburg, Joseph M.	292	Heath, Robert G.	291, 336	Ives, Ronald L.	72, 103	Lerner, A. Bunsen	207, 390
Fear	164	Glpe, Harrison S.	136	Heating	72, 103	Izzo, Joseph L.	307	Leukemia	91, 178,
Fence posts	121	Giraffe	35	Heidt, Lawrence J.	349	Jacob, Walter	26	Levin, Robert H.	367
Fence staples	270	Girls, School age	37	Heimets, F.	216	Jacobs, J. A.	328	Levine, Seymour	137
Fermi, Enrico	14	Gland chemicals	216	Helicopter-Airplane	232, 238	Jacobsen, Lydik S.	328	Lewis, Alvin E.	19
Fertility	386	Glands, Stimulation of	77	Helicopters	99, 178	Jacobsen, Edmund	23	Lewis, T. D.	233
Fert, Seldon D.	390	Glandular fever	201	Helmet, Pilots'	334	Jacobson, Leon O.	178, 214	Li, C. H.	196
Field, Forrest S.	280	Glandular over-functioning	364	Helmet, Space	160	Jacobson, Kurt	205	Li, C. P.	323
Field, Mark G.	256	Glenister, T. W.	338	Hemispheres	192	Japanese beetle	269	Libet, Benjamin	313
Field theory, Unified	227	Globe, Plastic	16	Hemophilia in women	120	Jaundice	152	Lichtenstein, Becky	37
File, Abrasive	400	Glover, Donald M.	325	Henderson, L. S.	229	Jaw bone fluid	30	Lichtenstein, M. R.	8
File, Precision	96	Glue	128, 356	Hendricks, Sterling B.	385	Jelley, J. V.	165	Liddle, G. W.	358
Filing machine	356	Glue for grafts	185,	Henneman, Philip H.	361	Jensen, Fred W.	180	Life, Length of	349
Film developing	144, 160	Gold, Radioactive	201, 232	Henshaw, Paul S.	364	Jet airplanes	97, 101,	Life-like chemicals	181, 358
Findlay, Charles W., Jr.	340	Goldberg, Edward M.	41	Hermes, Doris Jean	326	Jet airplane oil	115, 147, 295, 321, 334,	Lights	80, 96, 128, 240
Finke, Jacob S.	136	Goldfish, Tailless	153	Hertz, Lewis B.	50	Jet-Blast problem	238	Lighting	73, 240, 394
Finke, Walter	62	Goldsmith, Alfred N.	313	Hertzmark, Maurice H.	21	Jet engines	21, 88, 97	Lilperos, George	218
Fire alarm	112	Golf tee	141	Hervey, George W.	152	Jet streams	83, 116	Lindstrom, Frithjof J.	374
Fire extinguisher	336	Gomez, Federico	182	Hewitt, William	162	Johansson, A. V.	79	Line-gripper	96
Fire-retardant	132	Gooding, Leslie N.	233	Hibbory horned devil	133	Johnson, Daniel	280	Link, Karl Paul	380
Fireflies	349	Goodman, Raymond	294	High blood pressure	129, 136	Jones, Mary Katherine	280	Livers	103, 149, 233
Fish	11, 38, 51, 68,	Goodrich, Hunter C.	294	Hill, A. Bradford	328, 379	Jorgensen, Henning	132	Livas, Saved	278, 290
Fish, Fatherless	306, 319, 329,	Gordon, Paul	132	Hill, David	358	Juda, Walter	112	Livestock, Diseases of	279
Fish and Wildlife Service	279	Grace, Edward J.	375	Hill, J. M.	263	Juke boxes	281	Lizards	232
Fishing equipment	6, 208, 320	Gracwohl, R. B. H.	47	Hinkle, Lawrence E., Jr.	306	Jupiter	246	Lobotomy operations	251
Fitch, John E.	185	Grah, R. F.	380	Hinton, Taylor	121			Lock, Safety	73
Fitzpatrick, T. B.	207, 390	Grant, Francis C.	75	Hitchings, George H.	246			Lockjaw	136
Flannel cloth	128							Loevinger, Jane	256
Flashlight bulb	256							Loevinger, Robert	232
Flataker, Lars	7							Logic	29
Fleschner, Charles A.	166							Long, C. N. H.	25
Fletcher, Joseph O.	213								277
Flickinger, Reed A.	75								
Files	160, 313								
Flocks, R. H.	232								

1	Long, Robert R.	100	Milk	260	Operations research	121	Potato salad	355	Rocket missile	373, 387
2	Longmire,		Milky Way galaxy	23	Oppenheimer, J. R.	14	Potts, Willis J.	67	Rockets	99, 213
3	William P.	99, 217	Miller, Carl F.	52	Osborn, Lem	249	Poultry	68	Rodent repellents	236
4	Loper, Herbert B.	54	Miller, Gerald M.	27	Oschner, Alton	366	Power lines, Dangers of	335	Rodman, Morton J.	101
5	Loudenslager, O. W.	349	Miller, H. F.	283	Otter	14	Power system, Toy	354	Rodriguez-Benitez,	
6	Love, William S.	283	Miller, James A.	25	Owen, J.	323	Powers, D. H.	348	Victor	203
7	Lovorn, Roy L.	207	Miller, Leon	149	Oxygen	117, 119	Pratt, Gerald H.	61, 104, 200	Roe, Anne	261
8	Lowery, P. C.	137	Miller, Norma	5	Oyer, E. B.	198	Pregnancy		Roof framing	199
9	Lubricant film	32	Miller, Stanley L.	358	Ozone measurement	119	Toxemia of	135, 136, 137	Rope, Wire	264
10	Luffy, Carroll W.	150	Mine detector	282			Pregnancy advice	180	Roper, Val J.	309
11	Lung operations	371	Mine disasters	9			Press, Frank	102	Roseberg, Bertil	153
12	Luyet, Basile J.	40, 121	Mines, Detonation of	232	PAS	40, 127	Pressman, Joel	121, 375	Rosenbloom, Libby	306
13	Luyten, W. J.	54	Minton, Sherman A.	40	Pacific exploration	349	Pretzel twister	136	Rosenthal, Daniel	63
14	Lynd, Langtry E.	142	Mints, Yale	94	Packard, Fred M.	279	Prince, David C.	57	Rosenthal, Milton	226
15	Lyon, James Alexander	55	Mirage	1, 5	Pain, Relief of	75, 291	Printing film	347	Ross, Howard C.	303
16			Mitchell, T. G.	201	Paint mixer	388	Prior, John T.	242	Roth, Ernest J.	136
17			Moisture conditioner	160	Paint spout	176	Production		Rotter, Julian	216
18	MacAusland, W. R. Jr.	84	Molasses in insecticides	52	Paints	53, 96, 206, 329	Increasing	24, 168	Rowles, Donald F.	371
19	McBride, Paul P.	152	Moloney, James Clark	310	Palsy	317, 391	Production problems	41	Rubber	53, 198, 370, 393
20	McClelland, David C.	313	"Mom" blaming	29	Pants, Snake-Proof	176	Propeller	135	Rubber disks	46
21	McCorkle, H. J.	280	Monopoly	207	Paper, Note-Envelope	96	Prospecting, Underwater	172	Rubbing alcohol	339
22	McCrary, Edward	5	Monsky, Paul H.	161, 162, 175	Paper punch	16	Protein structure	67, 150, 203	Rudd, Robert L.	217
23	McCreight, L. R.	183	Mook, Conrad P.	43	Papp, Michael W.	72	Proteins	56, 76	Rueggesser, J. M.	380
24	McCully, Wayne G.	283	Moon	102, 178, 314, 359	Parachutes	69, 71, 214	Protoplasmic systems	358	Rum	20
25	Macdonald, Ian	280	Moon, Photographing	295	Parents	292	Pruitt, Francis W.	392	Runcorn, S. K.	53
26	MacDonald, J. M.	26	Mop spray	144	Parks, John H.	149	Psittacosis	135	Runways, Length of	265
27	MacDermott, Frank A.	349	Mordy, Wendell A.	103	Parmenter, R. H.	242	Psychiatric interview		Russek, Henry I.	385
28	Macfarlane, Catharine	363	Morgan, Herbert R.	15	Parr, W.	142	Psychiatry, Russian	260	Russian atomic	
29	MacGoldrick, William, Jr.	168	Morgan, Karl Z.	31	Parrack, A. L.	180	aid	260	explosion	85, 141
30	MacGowan, Blaine	345	Morgan, W. W.	23	Parrot	135	Psychiatry, Russian	212	Russian doctors	286
31	MacIntyre, J. R.	72, 393	Morphine	185	Parsons	60	Psychodrama	44, 308	Russian grain plantings	312
32	McKay, Douglas	279	Morris, W. E.	72	Party kit	336	Psychological warfare	191	Russian psychiatry	212
33	McKercher, D. G.	345	Morrison, Herbert	73	Paschakis, Karl E.	249	Psychology	325	Russian science	39, 133
34	McMillan, Alan F.	199	Mortar	281	Patterson, Edith	57	Psychopaths, Treating	308	Rust	51, 329
35	McMillan, Edwin M.	14, 41	Moss, Spanish	390	Patt, Harvey M.	245	Public Health Service	39	Rust-Controlling oil	400
36	MacNevin, William M.	181	Moth	357, 370	Paulhus, J. L. H.	348	Puma	179, 249	Rzepela, Stanley	276
37	McNish, A. G.	102	Mothers	376	Pauling, Linus	67, 150, 203	Putty	40		
38	McNutt, S. H.	86	Mothproofing	12	Pease, W. M.	90			Sabin, Albert B.	246
39	McPherson, A. T.	149	Mould, Lillian	152, 164	Pelicans	7	Q-Fever	67	Sadove, Max S.	15
40	Macrae, Donald	164	Mountains	385	Pelycosaur	262	Quiran, Ernest R.	87	Safety belt	192
41	MacRae, Donald A.	24	Mouse-Feeding station	176	Pence, Roy J.	378			Saint-Pierre, Hubert	379
42			Movie, 3-D	105, 256, 283, 291	Pencil-Counter outfit	208			Salamander	89
43			Mowrer, O. Hobart	105	Penguin, Emperor	338			Salk, Jonas E.	211, 230, 242, 249
44			Mrkos, Antonin	265	Pencilcilin	151			Salt	328
45			Mulder, Donald W.	317	Perkins, C. B.	102			Salveson, Melvin E.	182
46			Multiple sclerosis	280, 293	Permanents	348			Samuels, Leo	260
47			Muscles	23, 313	Perr, Daniel J.	211			Saturn	21
48			Myers, George S.	108	Perr, Daniel J.	211			Saw, Electric chain	80
49			Myers, Jack	226	Peterson, Donald B.	317			Sax, Karl	186
50			NP discharges	317	Pett, L. Bradley	260			Scaffolding, Steel	388
51			Naide, Meyer	238	Pfeiffer, Carl C.	246			Schaefer, H. J.	323
52			Nail, Virginia McK.	40	Phenology	237			Schaefer, Milner B.	276
53			Nail straightener	139	Phillips, E. Alan	161, 162, 175			Schaefer, Vincent J.	83, 397
54			Nails	350	Phillips, Ralph	278			Schaeffer, Morris	323
55			Nasal illnesses	281	Phosphorus, Radioactive	325			Schaffarick, Ralph W.	270
56			National Academy of Sciences	294	Photocopying machine	160			Scharrer, Berta	270
57			National Bureau of Standards	231, 247, 263, 278, 294	Photoflash exposure guide	16			Schlechtman, A. M.	76, 89
58			National Inventors Council	282	Photographic fixer	64, 372			Scheduler, Electronic	182
59			National Science Fair	182, 264, 311, 326	Photographic material	347			Scheinker, I. Mark	293
60			National Science Foundation	79	Photographic methods	349			Schizophrenia	246
61			Necktie	303	Photographic plates	356			Schlittler, Emil	365
62			Needle, Heart-Sewing	61	Photography, Astro-nomical	295			Schloemer, R. W.	306
63			Neiburger, Morris	118	Photosynthesis	226			Schlossberg, Harold	105
64			Neitz, O. W.	34	Physical examinations	53			Schmitt, Richard R.	280
65			Nelson, Warren O.	262	Picture-hanging kit	304			Schoenfeld, William N.	152
66			Nerve gas	271, 296	Pigs	63, 176			School attendance	346
67			Neubauer, L. W.	121	Pilots	7, 206			Schreiber, Raymond P.	103
68			Neurotics	105	Pillow, Water-cooled	134			Schriever, William	30
69			Neutrons	248, 275	Pines	73, 80, 166, 223, 365, 399			Schultz, M. A.	68
70			New Guinea	153	Pink elephants	64			Schwartz, David I.	111
71			Newburger, Howard M.	51	Pitts, Forrest W.	69			Science, African	229
72			Newman, Murray	168	Pituitary glands	103, 229			Science and politics	23, 263
73			Newmark, N. M.	60	Pituitary hormone	281, 387			Science decisions	71
74			Nickerson, Mark	247	Planets	21, 202, 395			Science Department	79
75			Night sky light	165	Planet, Minor	236			Science forecast	3
76			Nininger, H. H.	349	Planetarium	233			Search	58, 69, 92, 117, 145, 149, 154, 161, 162, 163, 167, 228
77			Nitrogen fixation	25	Planetary systems, Protoplasmic	358			Scientists,	
78			Noise	95, 295	Planets	21, 29, 74, 94, 138, 266, 330			Politics and	22, 263
79			Noil, Hans	348	Plant food	192			Scientists, Research	261
80			Nose drops	34	Plant growth	335			Scientists, Supply of	30
81			Novitski, Edward	345	Plants	77, 150, 250, 292			Scrapie	169
82			Novy, Frederick G.	89	Plasma	217			Screen brace	192
83			Nuclei transplanted	358	Plast, Gilbert N.	307			Sea otter	231
84			Nucleus	14, 351	Plastic	312, 382			Sealing tape	272
85			Nutman, F. J.	91	Plastic in skull	364			Seaplanes	220
86			Nylon	72	Pliers	139			Seat separation, Rear	255
87			Oak wilt	331	Plummer, Norman	306			Seeds	96
88			Oberg, Kalervo	355	Plutonium	269, 359			Seeger, N. V.	393
89			Ocean cable	77	Pneumonia	19			Selsmograph, Vertical	102
90			Ocean floor	177, 184	Poison ivy	302, 325			Selby, C. D.	217
91			O'Connor, Basil	191	Poison oak	284			Selgin, P. J.	396
92			Odor detection theory	278	Poisoning	8, 149			Selliger, Robert V.	7, 239
93			Oil, Synthetic	238	Pollimyelitis	40, 83, 151, 191, 211, 230, 246, 249, 323, 364, 365, 399			Sellers, Clemille F.	172
94			Oil shale	42	Politics hits scientists	263			Selsyns	283
95			O'Keefe, J. A.	314	Pollen counts	75			Selye, Hans	214, 364
96			"Old, old god"	120	Pollution, Stream	73			Semiconductors	242
97			Old people	104, 197, 296, 312, 324	Polyethylene	297, 382			Server, Cold-food	336
98			Oliver, James A.	46	Polypeptides, Synthetic	385			Sewing, Light for	72
99			Operation for disfigurement	200	Pomerat, C. M.	317			Sewing kit	304
100					Poos, Edgar E.	329			Portable	32
101					Popham, Lee W.	287			Sex, Mixed	21
102					Population	379, 381			Sex habits	280
103					Pork	59			Shannon, Claude E.	262
104					Pornographic literature	9			Shannon, Lyle	207
105									Shapiro, Shepard	380
106									Shapely, Harlow	19, 40, 178, 242
107									Shark	108
108									Sharp, Ward M.	27
109									Sharvelle, E. G.	195

Shaver, Electric	160	Steinberger, Emil	262	Tools, First American	54	Vestal, Donald M., Jr.	360	White, J. C. D.	242
Shay, Oscar	133	Steiner, Abram Arie	363	Tooth decay	196, 200	Veterans, Disabled	205	White, Paul Dudley	84, 129
Sheehan, Joseph	216	Sterility	386	Tooth growth	216	Villard, O. G., Jr.	187, 217	Whitehouse, W. E.	36
Sheep, Counting	226	Sterilization, Atomic	134	Toothbrush for baby	137	Virus disease vaccine	183	Wiggers, Carl J.	36
Sheep disease	169, 303, 346	Stern, Ben	40	Tornadoes	291, 343, 377	Viruses	67, 89, 385	Wigner, E. P.	19
Shelby, Robert Ewart	313	Stern, E. George	350	Toth, Stephen J.	397	Vitamin A	61, 365	Wijk, Uco van	19
Shelf guards	356	Sternberg, William H.	310	Towler, Juby E.	15	Vitamin B-12	296, 340	Wildlife	334
Sheline, Raymond J.	61	Stevens, K. W. H.	323	Toys, Magnetized	325	Vitamin C	120	Williams, Huntington	127
Shells	153	Stevenson, Heber J. R.	19	Traffic	5, 62, 185	Viteles, Morris S.	24	Williams, Van Zandt	169
Shelstad, K. A.	40	Stewart, Ann H.	309	Training School	26	Vogeler, Robert	310	Wilson, Albert G.	180
Shelton, Thomas M.	135	Stewart, William D.	335	Transformers	343	Volcano	20	Wilson, C. D. V.	13
Shepard, Francis	20	Stiebeling, Hazel K.	371	Miniature	213	Volchok, Herbert L.	365	Wilson, Charles E.	278, 339
Sherman, Leon	84	Stiger, H. R.	79	Transistors	86, 170, 235, 333, 381	Volin, Lazar	312	Wilson, Robert R.	3
Sherman, R. A.	291	Stirling, Matthew W.	120	Tree propagation packet	48	Waddell, H. L.	90	Wilson, Victor A.	182
Shimada, Bell	276	Stomach	280	Trees	182, 186, 354, 370	Wagener, W. P. van	75	Winch, Portable	224
Ship stabilizer	21	Stomachs, New	99	Trichinosis	59	Waikman, Selman A.	116	Winchester, A. M.	24
Shock, Surgical	237	Stomach, Stopped	185	Trim-Board cutter	240	Waldrott, George L.	281	Wind forecasts	75
Shoekley, William	170	Storage container	192	Trolleys	393	Walker, Boyd	57	Wind instruments	117, 283
Shoes	8, 308	Storms	98, 307, 343, 377, 394	Trucks	213	Walker, Lewis W.	20	Wind tunnel motor	78
Shore, Robert Avery	118	Stout, Glenn E.	291	Trump, John	201	Walke, Learning	386	Window, Casement	389
Shorr, Ephraim	9	Strains, Measuring	63	Tsai, L. S.	45	Wall, False	151	Window-Cleaning solution	224
Shortwave reception	217	Stratton, Glen S.	329	Tuberculosis	6, 8, 40, 127, 134, 153, 184, 328, 344, 348	Wall primer	48	Winds, Testing	100
Shrews	15	Strawberries	137	Tumors, Lung	242	Wallpaper adhesive	208	Windsor, Travis	379
Siamese twins	192	Streptococcus infections	55	Tuna breeding stock	276	Walmer, C. Richard	295	Wings, Jet fighter	309
Siding, Aluminum	14	Streptomycin	6, 34, 127	Turbocompound air-liners	78	Wang, Jui H.	47	Winn, Harry A.	340
Siemel, Sascha	238	Stride, George O.	361	Turbocompound engine	102	Walpole, A. L.	57	Winser, John	246
Sikorsky, Igor I.	381	Stuart, Neil W.	376	Turbojet engine	117	War gas	271, 385	Winter, Charles A.	7
Silicon	339, 393	Sturgis, Bernard M.	199	Turboprop airliners	78	Warfarin	380	Wire splicer	56
Silicones	16	Stuttering	114	Turbojet engine	102	Warts, Vaccine against	212	Wiseman, J. D. H.	196
Silverware cleaner	197	Submarines	346	Twilight	264, 330	Waste	133	Witnesses	317
Simmons, James Stevens	153	Sugar beets	77	Twins, Third type of	248	Wastebasket, Plastic	224	Witschl, Emil	362
Simon, Claudia R.	201	Sugar cane plantations	35	2,4-D	207, 381	Water	47, 103, 199	Wolfe, Jack Albert	117
Simpson, Richard M.	165	Suits, C. G.	297	Type, Changeable	32	Water demineralizer	134, 356	Wolfe, Dael	36
Sinskey, Robert M.	270	Sulf drugs	143	Typewriter pad	372	Water-Finding gadget	233	Women, Masculinized	310
Siperstein, M. D.	50	Sulzberger, Marion B.	178	Typhoid vaccine	378	Waterman, Alan	79	Wood	338
Ski, Power-Driven	153, 393	Suntzeff, Valentina	378	Udenfriend, Sidney	343	Watts, C. B.	314	Wood press	386
Skin	207, 390	Supersonic research	305, 309	Ulcers	217, 246, 364	Wax, Household	390	Woodens, Albert T.	269
Skin, Bleaching of	143	Sun	91, 199, 372	Ullman, Albert D.	341	Weather	41, 43, 88, 91, 94, 98, 116, 134, 136, 196, 198, 200, 215, 264, 292, 397	Wooster, Warren S.	349
Skin disorder relief	303	Sunglasses	72	Ultrasound waves	181, 293	Weather, Extremes of	63	Worthington, E. B.	239
Skiort, Adjustable	364, 381	Surface finishes	372	Universe, Creation of	5, 36	Weaver, Harry M.	83	Wortis, Joseph	212
Skull	147	Surgery	375	Universe, Size of	19, 242	Weed killers	207, 249, 288, 381	Wound healing	340
Skyscraper	226	Suskin, Raymond R.	393	Uranium	235	Weeks, Sinclair	231, 247, 263, 278	Wrather, William E.	213
Sleep	259	Sutherland, George F.	313	Uranium cure claims	215	Wells, Fred E.	206	Wubben, Gerrit J. H. E.	363
Sleeping pills, Safe	248	Sutherland, V. C.	147	Uranium hunting	306	Weinberg, Sydney A.	98	Wylie, C. C.	243
Smallpox	319	Swans	48	Uranium mineral	150, 290	Welas, Harold S.	328	X-Rays	27, 196, 201, 278, 385
Smith, Clarence A.	380	Swendseld, Marian E.	296	Urban, Jerome U.	215	Weitz, Bernard	114	X-Rays, Three-Dimensional	98
Smith, H. P.	169	Swin, Boen	307	Urey, Harold C.	358	Wellman, Frederick L.	57	Xanten, William A.	88
Smith, J. L. B.	38, 78, 104	Switches	96, 112	Vaccine, Blue tongue	346	Werring, D. P.	371	Yoder, Lester	8
Smith, Roy J.	139	Symes, W. F.	325	Vaccine supply	183	West, Phillip M.	366	Young, David Michael	326
Smog	46, 102, 348	Synchrotron	41, 233	Vaccines, Better	242	Westfield, James	343, 377	Yuma Man	381
Snake	77	Syphilis	56, 319	Vall, Derrick	312	Wexler, Harry	144, 181, 200, 242	Zacharias, W. B.	8
Snow crystals	348	Szago, Clara M.	56	Valve, Ball	86	Whales	27, 278	Zellerbach, James D.	338
Snow detector	16	Szilard, L.	375	Vandenbergh, Hoyt S.	86	Wheel balancing set	288	Zinner, Paul	281
Snow fences	56	Syphilis	319	Van Voorhees, Stanley	50	Wheel lift	304	Zirkle, Conway	39
Snow plow	133	T.E.M.	57, 385	Vegetables	121, 250	Wheelbarrow	288	Zirkle, Raymond E.	232
Snowfall record	348	Table, Picnic	128	Venezuela	309	Whipple, Fred L.	38	Zobel, Bruce	223
Soap, Growth	57	Tackle belt	64	Verhoogen, J.	307	White, Andrew J.	362	Zoll, Paul M.	267
Sobel, Albert Edward	346	Talent, Detecting	228	Vaccine, Blue tongue	346	White, Briggs J.	386		
Sock, One-Size	272	Tamblyn, F. W.	36	Vaccine supply	183				
Soil, Analyzing	118	Taplin, George V.	394	Vaccines, Better	242				
Soil, Reclaiming	363	Tarr, Robert G.	328	Vall, Derrick	312				
Soil-Boring machine	176	Taste tests	203	Valve, Ball	86				
Soil conditioners	234	Taylor, A. W.	201	Vandenbergh, Hoyt S.	86				
Soil mineralizer	256	Taylor, Craig	87	Van Voorhees, Stanley	50				
Soil quality	30	Taylor, E. Stewart	275	Vegetables	121, 250				
Soilless Gardening	363	Taylor, I. I.	349	Venetian blind wing	309				
Solder	64, 160	Taylor, R. D.	168	Venezuela	309				
Soldering	32, 256	Teaching aid	112	Verhoogen, J.	307				
Soldiers, Nervous	317	Teeth	101, 380						
Sorokin, Constantine	226	Teichmann, Frederick	147						
Sound in fog	220	Telephone	392						
Sound waves	4	Telephone numbers	56						
Space crash, Escaping	348	Television	35, 104, 183, 283, 290, 313, 327, 332, 383, 388						
Space flight	110, 153, 244, 323	Television antenna	16, 400						
Spark plugs	370	Television film scanner	297						
Spear-Shooter, Plastic	320	Television transmitter	259						
Sperry, Holland R.	338	Television tube	294						
Spiegelman, Sol	197	Tempel, Carl W.	6						
Spielberg, Morris	348	Temperature, Taking	95						
Spindler, L. A.	59	Teosinte	62						
Spirochetes, Diet for	57	Tepper, Morris	377						
Spittler, August W.	89	Tequila	207						
Spitz, Armand N.	233	Tests, Intelligence	152						
Sponge, Surgical	320	Tests, Testing	181						
Sponsler, O. L.	358	psychological	181						
Spoon cradle	32	Theatre emotion	255						
Sprague, Randall G.	152	recorder	176						
Spray, Anti-Electric	372	Thermometer clamp	304						
Spray gun	400	Thermoplastic	25						
Sprinkler, Grass	112	Thinking	379						
Spurr, Donald	297	Thiocyanate	8						
Spurway, H.	197	Thomas, B. H.	121						
Squibb, Robert L.	63	Thompson, Randall L.	247, 263						
Staats, Wayne F.	292	Thornthwaite, C. W.	237						
Stadd, Donald M.	103	Thye, Edward J.	72						
Stage, Positions on	19	Tipton, Isabel H.	240, 280, 312, 320						
Stahmann, Mark A.	385	Tire inspection	215						
Starch, Plastic	80	Tires, Rolligon	217						
Starlings	88	Tissue "specificity"	278						
Starr, Louis	308	Titanium	281						
Stars	40, 74, 202, 266, 330, 395	Titanium glass	142						
Stars, Age of	29	Titus, Elwood W.	241, 343						
Stars, Size of	54	Tobacco	335						
Stars, Speed of rotation	31	Toenail, Ingrown	111						
Stars, Temperatures of	24	Toman, Walter	260						
Stars, Twinkling of	116	Tongs, Metal	372						
Statue, Clay	120	Tongues, Wagging of	136						
Stearns, Genevieve	142								
Steenken, William	134								
Stehling, K. R.	349								

ERRATA, Vol. 63, Nos. 1-26, January-June, 1953

PAGE	TITLE BEGINS	CORRECTION
63	Feed Ramie	Par. 4, line 5, after ramie insert on a dry weight basis.
115	New Magnetic	Col. 2, line 13, explored for explained; delete lines 15-18.
179	Photo Caption	Puma and mountain lion are the same animal. See SNL April 18, 1953, p. 249.
224	Do You Know?	Last item, last line, misleadingly for deceptively.
245	Pills Protect	Title and line 1, chemicals for pills; Par. 2, Dr. Harvey M. Patt . . . said that while it is not yet proved for man, if he knew an A-bomb attack was imminent and there was no way of escaping by seeking suitable shelter, he would take some cysteine as a last resort.
262	Furan Chemical	Delete first paragraph.
265	Whiskey Relieves	Par. 4, line 3, Peritrate for peritrate.
312	Slippery New Plastic	Par. 2, line 5, read Teflon, a Du Pont product, is 60
313	Authoritarian Tendency	Par. 3, lines 2, 3, delete names of Ricciuti and Swanson.
313	Nervous System	Par. 2, line 2, after Sutherland insert chief of the division of psychiatric education and training at the Department of Mental Hygiene, State of Maryland, and associate professor of psychiatry.
325	Radio-phosphorus	Par. 2, line 3, subject for patient; par. 3, line 2, after method, insert tried so far on experimental animals.
338	Emperor Penguin	Par. 3, lines 2-3, read collected from rookeries along Antarctic shores.
338	Mast head	No. 22 for No. 19.
359	Books	Col. 2, line 8, Association for Associated; lines 14-15, Lowell Sumner for Lowell Canyon.
356	Do You Know?	Line 1, cactus for fig tree.
372	Do You Know?	Last item, line 3, kilogram for gram.

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